

Kathleen Fuller Access DB# KH209
SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Laura Jean Examiner #: 71724 Date: 9/29/05
Art Unit: 1744 Phone Number 30-271294 Serial Number: 101023372
Mail Box and Bldg/Room Location: 683 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: See Front Page
Inventors (please provide full names): _____

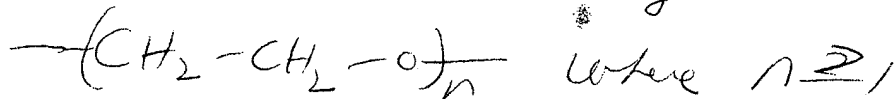
Earliest Priority Filing Date: _____

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Could you search for a liquid electrolyte comprising

a solvent containing a γ -butyrolactone and

a macromolecular material having the structure



Thank,

Laura

STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>K. Fuller</u>	NA Sequence (#) _____	STN <u>r</u>
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Online Time: <u>34</u>	Other _____	Other (specify) _____

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE

L5 1 SEA FILE=REGISTRY ABB=ON BUTYROLACTONE/CN
L6 1 SEA FILE=REGISTRY ABB=ON "POLYETHYLENE OXIDE"/CN
L7 15837 SEA FILE=HCAPLUS ABB=ON L5 OR BUTYROLACTONE
L8 84653 SEA FILE=HCAPLUS ABB=ON L6
L9 321 SEA FILE=HCAPLUS ABB=ON L7 AND L8
L11 2202 SEA FILE=HCAPLUS ABB=ON L7(L)ELECTROLYT?
L13 4 SEA FILE=HCAPLUS ABB=ON L11(L)L8
L15 140 SEA FILE=HCAPLUS ABB=ON L9 AND ELECTROLYT?
L16 97 SEA FILE=HCAPLUS ABB=ON L15 AND BATTER?
L17 2675 SEA FILE=HCAPLUS ABB=ON L8(L)DEV/RL
L18 61 SEA FILE=HCAPLUS ABB=ON L17 AND L16
L19 1588 SEA FILE=HCAPLUS ABB=ON L7(5A)SOLVENT#
L21 6 SEA FILE=HCAPLUS ABB=ON L18 AND L19
L22 9 SEA FILE=HCAPLUS ABB=ON L13 OR L21
L23 7685 SEA FILE=HCAPLUS ABB=ON POLYMER(4A)ADDITIV?
L24 1 SEA FILE=HCAPLUS ABB=ON L18 AND L23
L25 1 SEA FILE=HCAPLUS ABB=ON L16 AND L23
L26 9 SEA FILE=HCAPLUS ABB=ON L22 OR L24 OR L25
L27 47 SEA FILE=HCAPLUS ABB=ON L7 AND POLYETHYLENE OXIDE
L28 30 SEA FILE=HCAPLUS ABB=ON L27 AND ELECTROLYT?
L29 20 SEA FILE=HCAPLUS ABB=ON L28 AND BATTER?
L30 26 SEA FILE=HCAPLUS ABB=ON L26 OR L29

=> D L30 BIB ABS IND HITSTR 1-26

L30 ANSWER 1 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2005:96153 HCAPLUS

DN 142:159585

TI Secondary nonaqueous **electrolyte battery**

IN Inada, Shusuke; Yajima, Toru; Fukui, Asuka; Sato, Asako; Matsumoto, Koichi; Endo, Shota; Sato, Kazuya

PA Toshiba Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 15 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005032549	A2	20050203	JP 2003-195977	20030711
PRAI	JP 2003-195977		20030711		

AB The **battery** uses an anode containing poly(ethylene glycol) and/or poly(ethylene oxide), having number average mol. weight 5000-1,000,000, at 0.2-3% the weight of the **battery electrolyte**. Preferably, the **electrolyte** contains cyclic carbonate and γ -butyrolactone.

IC ICM H01M004-02

ICS H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary nonaq **battery** anode polyethylene glycol;**polyethylene oxide** secondary nonaq **battery**

anode

IT **Battery** anodes(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT Carbon fibers, uses

RL: DEV (Device component use); USES (Uses)

(carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT Polyoxyalkylenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT 9004-32-4, CMC 25322-68-3, Poly(ethylene glycol)
 RL: MOA (Modifier or additive use); USES (Uses)
 (carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; carbonaceous anodes containing poly(ethylene glycol) and poly(ethylene oxide) for secondary lithium **batteries**)

L30 ANSWER 2 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:943678 HCAPLUS

DN 142:180347

TI Gel-type polymer **electrolyte** and lithium **battery**
 employing the **electrolyte**

IN Bae, Jin Yeong; Doo, Seok Gwang; Hwang, Seung Sik; Kim, Han Su; Kim, Jin Hwan

PA Samsung SDI Co., Ltd., S. Korea

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT Patent

LA Korean

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2003017945	A	20030304	KR 2001-51589	20010825
PRAI	KR 2001-51589		20010825		

AB A gel-type polymer **electrolyte**, a lithium **battery**
 employing the **electrolyte** and their preparation methods are provided,
 to improve the ion conductivity and the organic **electrolyte** solution
 protecting property at a room and high temperature The gel-type polymer
electrolyte comprises 10-60 wt% of a product obtained by the
 crosslinking reaction of polyethylene glycol and an epoxy compound; 10-70
 wt% of a softening agent polymer; 20-90 wt% of an organic **electrolyte**
 solution which comprises a lithium salt and an organic solvent and is mixed with
 the cross-linked product uniformly; and optionally 5-40 wt% of a ceramic
 filler. Preferably the softening agent polymer is at least one selected
 from the group consisting of polyvinylidene fluoride, vinylidene
 fluoride-hexafluoropropylene copolymer, poly(vinyl chloride), polysulfone,
 polymethacrylate, polyolefin, **polyethylene oxide**,
 polyurethane, poly(vinyl alc.) and polyacrylonitrile; the organic solvent is
 at least one selected from the group consisting of ethylene carbonate,
 propylene carbonate, di-Me carbonate, di-Et carbonate, ethylmethyl
 carbonate, THF and γ - **butyrolactone**; the lithium salt is
 selected from the group consisting of LiAsF₆, LiPF₆, LiSCN, LiClO₄, LiBF₄,
 LiCF₃SO₃, LiN(CF₃SO₂)₂ and LiC(CF₃SO₂)₃; and the ceramic filler is at
 least one selected from the group consisting of silica, alumina, lithium
 aluminate and zeolite.

IC ICM H01M004-60

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST gel type polymer electrolyte lithium battery employing electrolyte

IT Fillers
(ceramic; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(epoxy-, graft, polyethylene glycol- containing; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Zeolites (synthetic), uses
RL: DEV (Device component use); USES (Uses)
(filler; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Ceramics
(fillers; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Battery electrolytes
Plasticizers
Polymer electrolytes
(gel type polymer electrolyte and lithium battery employing electrolyte)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel type polymer electrolyte and lithium battery employing electrolyte)

IT Drug delivery systems
(gels; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(halo; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Ionic conductivity
(improved; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Secondary batteries
(lithium, gel polymer electrolytes for; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Polyolefins
Polysulfones, uses
Polyurethanes, uses
RL: DEV (Device component use); USES (Uses)
(plasticizer; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(polymers, plasticizer; gel type polymer electrolyte and lithium battery employing electrolyte)

IT Epoxy resins, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, graft, polyethylene glycol- containing; gel type polymer electrolyte and lithium battery employing electrolyte)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 37220-89-6, Lithium aluminate

RL: DEV (Device component use); USES (Uses)
(filler; gel type polymer **electrolyte** and lithium
battery employing **electrolyte**)

IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene
carbonate 105-58-8, Diethyl carbonate 108-32-7 109-99-9,
Tetrahydrofuran, uses 556-65-0, Lithium thiocyanate 616-38-6
623-53-0, Ethylmethyl carbonate 7791-03-9 14283-07-9, Lithium
tetrafluoroborate 21324-40-3 29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium
bis(trifluoromethanesulfonyl)imide 132843-44-8, Lithium
bis(pentafluoroethanesulfonyl)imide

RL: DEV (Device component use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery**
employing **electrolyte**)

IT 25322-68-3D, Polyethylene glycol, reaction products with epoxy compds.

RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)

(gel type polymer **electrolyte** and lithium **battery**
employing **electrolyte**)

IT 9002-86-2, Polyvinyl chloride 9002-89-5, Polyvinyl alcohol 9011-17-0,
Vinylidene difluoride-hexafluoropropylene copolymer 24937-79-9,
Poly(vinylidene difluoride) 25014-41-9, Polyacrylonitrile 25087-26-7D,
Poly(methacrylic acid), derivs. 25322-68-3, **Polyethylene
oxide**

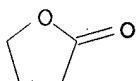
RL: DEV (Device component use); USES (Uses)
(plasticizer; gel type polymer **electrolyte** and lithium
battery employing **electrolyte**)

IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)
(gel type polymer **electrolyte** and lithium **battery**
employing **electrolyte**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 3 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:938456 HCAPLUS

DN 142:117458

TI LiFePO₄/polymer/natural graphite: low cost Li-ion **batteries**

AU Zaghib, K.; Striebel, K.; Guerfi, A.; Shim, J.; Armand, M.; Gauthier, M.

CS Institut de Recherche d'Hydro-Quebec, QC, J3X 1S1, Can.

SO Electrochimica Acta (2004), 50(2-3), 263-270

CODEN: ELCAAV; ISSN: 0013-4686

PB Elsevier B.V.

DT Journal

LA English

AB The aging and performance of natural graphite/PEO-based gel
electrolyte/LiFePO₄ cells are reported. The gel polymer
electrolytes were produced by electron-beam irradiation and then
soaked in a liquid **electrolyte**. The natural graphite anode in gel
electrolyte containing LiBF₄-EC/GBL exhibited high reversible capacity
(345 mAh/g) and high coulombic efficiency (91%). The LiFePO₄ cathode in
the same gel-polymer exhibited a reversible capacity of 160 mAh/g and 93%
coulombic efficiency. Better performance was obtained at high-rate

discharge with 6% carbon additive in the cathode, however the graphite anode performance suffers at high rate. The Li-ion gel polymer **battery** shows a capacity fade of 13% after 180 cycles and has poor performance at low temperature due to low diffusion of the lithium to the graphite in the GBL system. The LiFePO₄/gel/Li system has an excellent rate capacity. LiFePO₄ cathode material is suitable for HEV application.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 72, 76

ST gel polymer **electrolyte** graphite Lithium **battery** anode
discharge capacity; solvent effect lactone carbonate lithium secondary
battery cycling impedance; iron lithium phosphate composite
cathode polymer **electrolyte** discharge capacity

IT **Battery** anodes
 Battery cathodes
 Gels
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
 (LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Carbon fibers, uses
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
 (Petoca, modifier for composite anode; LiFePO₄/polymer/natural graphite
 and gel polymer **electrolyte** for use in low cost Li-ion
 batteries)

IT Carbon black, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)
 (Shawinigan; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric energy
 (discharge capacity of half-cells and assembled **batteries**;
 LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Cathodic polarization
 (discharge potential profiles; LiFePO₄/polymer/natural graphite and gel
 polymer **electrolyte** for use in low cost Li-ion
 batteries)

IT Pressure
 (effect on reversible and irreversible electrode capacities;
 LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
 for use in low cost Li-ion **batteries**)

IT Polymer **electrolytes**
 (gel; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric resistance
 (interfacial; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Secondary **batteries**
 (lithium; LiFePO₄/polymer/natural graphite and gel polymer
 electrolyte for use in low cost Li-ion **batteries**)

IT Electric impedance
 (of electrode half-cells; LiFePO₄/polymer/natural graphite and gel

- polymer electrolyte for use in low cost Li-ion batteries)
- IT Polymerization
(radiochem.; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 7439-93-2, Lithium, uses 7440-50-8, Copper, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 7782-42-5P, Graphite, uses
RL: DEV (Device component use); PRP (Properties); PUR (Purification or recovery); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(Natural, composite anodes with PVDF; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 24937-79-9, PVDF
RL: DEV (Device component use); USES (Uses)
(composite anodes with graphite, cathodes with carbon black/FeLiPO₄; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 15365-14-7, Iron lithium phosphate (FeLiPO₄)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(composite cathodes with PVDF/carbon black; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(dis; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 17341-24-1D, PEO complexes, uses
RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents and PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 105-58-8, Diethyl carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide
RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents/PEO/lithium salts; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 14283-07-9
RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents/PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents /lithium salts/PEO; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 25322-68-3D, PEO, lithium ion complexes
RL: DEV (Device component use); USES (Uses)
(gel polymer electrolytes with organic solvents/lithium salts; LiFePO₄/polymer/natural graphite and gel polymer electrolyte for use in low cost Li-ion batteries)
- IT 25322-68-3DP, PEO, crosslinked, lithium ion complexes
RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(gel polymer **electrolytes** with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
for use in low cost Li-ion **batteries**)

IT 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide

RL: DEV (Device component use); USES (Uses)

(salt in polymer gel **electrolyte**; LiFePO₄/polymer/natural
graphite and gel polymer **electrolyte** for use in low cost
Li-ion **batteries**)

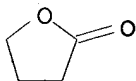
IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)

(gel polymer **electrolytes** with organic **solvents**
/lithium salts/PEO; LiFePO₄/polymer/natural graphite and gel polymer
electrolyte for use in low cost Li-ion **batteries**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



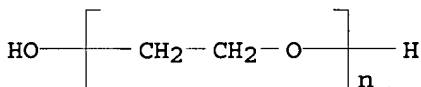
IT 25322-68-3D, PEO, lithium ion complexes

RL: DEV (Device component use); USES (Uses)

(gel polymer **electrolytes** with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
for use in low cost Li-ion **batteries**)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



IT 25322-68-3DP, PEO, crosslinked, lithium ion complexes

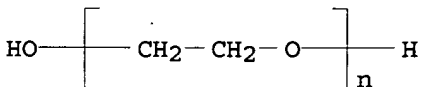
RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(gel polymer **electrolytes** with organic solvents/lithium salts;
LiFePO₄/polymer/natural graphite and gel polymer **electrolyte**
for use in low cost Li-ion **batteries**)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 4 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:843679 HCAPLUS

DN 141:426229

TI Polymer **electrolyte** for lithium secondary **battery**

IN Lim, Mi Ra; Lee, Seung Yeun

PA Lg Chemicals Co., Ltd, S. Korea

SO Repub. Korea, No pp. given

CODEN: KRXXFC

DT Patent

LA Korean

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 147106	B1	19980915	KR 1995-30963	19950920
PRAI	KR 1995-30963		19950920		

AB A high polymer **electrolyte** of a lithium secondary **battery** is provided to improve an ion conductivity at a low temperature and to increase a discharge capacity. A lithium secondary **battery** comprises a complex anode, a high polymer **electrolyte**, a cathode, an anode collector plate and a cathode collection plate. The high polymer electrolysis is formed by mixing two or more materials selected from a group of dimethoxyethane, diethylphthalate (DEP), gamma-**butyrolactone**, N-methylpyrrolidone, and 2-Me THF, with a **polyethylene oxide** (PEO) containing a lithium salt.

IC ICM H01M010-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST polymer **electrolyte** lithium secondary **battery**

polyethylene oxide salt complex

IT Plates

(current collectors; polymer **electrolyte** for lithium secondary **battery**)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(lithium complexes, in polymer **electrolyte**; polymer **electrolyte** for lithium secondary **battery**)

IT Secondary **batteries**

(lithium, polymer **electrolytes** for; polymer **electrolyte** for lithium secondary **battery**)

IT **Battery electrolytes**

Polymer **electrolytes**

Solid **electrolytes**

(polymer **electrolyte** for lithium secondary **battery**)

IT 17341-24-1D, complexes with **polyethylene oxide**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(in polymer **electrolytes**; polymer **electrolyte** for lithium secondary **battery**)

IT 84-66-2, Diethylphthalate 96-47-9, 2-Methyl tetrahydrofuran

96-48-0 110-71-4 872-50-4, N-Methylpyrrolidone, uses

7439-93-2D, Lithium, salts

RL: DEV (Device component use); USES (Uses)

(polymer **electrolyte** for lithium secondary **battery**)

IT 25322-68-3D, **Polyethylene oxide**, lithium complexes, in

polymer **electrolyte**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(polymer **electrolyte** for lithium secondary **battery**)

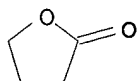
IT 96-48-0

RL: DEV (Device component use); USES (Uses)

(polymer **electrolyte** for lithium secondary **battery**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 5 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:433948 HCAPLUS

DN 140:426125

TI Coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes

IN Zaghib, Karim; Armand, Michel; Guerfi, Abdelbast; Perrier, Michel; Dupuis, Elisabeth; Charest, Patrick

PA Hydro-Quebec, Can.

SO PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004045007	A2	20040527	WO 2003-CA1739	20031113
	WO 2004045007	A3	20050609		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	CA 2411695	AA	20040513	CA 2002-2411695	20021113
	CA 2503893	AA	20040527	CA 2003-2503893	20031113
	EP 1573834	A2	20050914	EP 2003-775013	20031113
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRAI	CA 2002-2411695	A	20021113		
	WO 2003-CA1739	W	20031113		
AB	An electrode for an electrochem. cell (especially a battery) is prepared by coating at least partially the electrode with a film obtained by spreading and drying of an aqueous solution on the electrode support, in which the aqueous solution contains at least an active material, a water-soluble binder, and a water-soluble thickener. Suitable active materials are selected from finely divided (particle size 10-50 μ) metal oxides (e.g., LiMn2O4, LiCoO2, LiFePO4, LiNiO2, Li4Ti5O12, etc.), ceramics, carbon (including carbon fibers, synthetic graphite, and natural graphite), metals (e.g., Ag, Sn, and Cu), and semiconductors (especially Si). Suitable thickeners include natural and modified celluloses (e.g., CM-cellulose and hydroxymethyl cellulose); suitable binders include natural and synthetic rubber. Both anodes and cathodes can be prepared by this method. The method for electrode fabrication is especially useful for construction of secondary lithium batteries with nonaq. electrolytes and polymeric separators.				
IC	ICM H01M004-04				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	battery electrode coating carbon encapsulation; thickener binder				

battery electrode coating

IT Ceramics
Semiconductor materials
(**battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT Carbon fibers, uses
Coke
Metals, uses
Oxides (inorganic), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT EPDM rubber
Fluoropolymers, uses
Polyesters, uses
Polyoxyalkylenes, uses
RL: NUU (Other use, unclassified); USES (Uses)
(**battery separators**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT Acrylic rubber
Epichlorohydrin rubber
Natural rubber, uses
Nitrile rubber, uses
Styrene-butadiene rubber, uses
Synthetic rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
(binder, for coating of **battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT **Battery anodes**
Battery cathodes
Battery electrodes
Coating materials
(coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT Nitrile rubber, uses
RL: NUU (Other use, unclassified); USES (Uses)
(hydrogenated, binder, for coating of **battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT **Secondary batteries**
(lithium **batteries**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT **Battery electrolytes**
(nonaq.; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

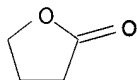
IT **Secondary battery separators**
(polymeric; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT Polysaccharides, uses
RL: NUU (Other use, unclassified); USES (Uses)
(thickener, for coating of **battery electrodes**; coating of substrates with active material, binder, and thickener for fabrication of **battery electrodes**)

IT Tin alloy, base

- RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 9004-32-4, Carboxymethyl cellulose
RL: NUU (Other use, unclassified); USES (Uses)
(Cellogen, thickener, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO₂) 12031-95-7, Lithium titanium oxide (Li₄Ti₅O₁₂) 12036-22-5, Tungsten oxide (WO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12190-79-3, Cobalt lithium oxide (CoLiO₂) 15365-14-7, Iron lithium phosphate (FeLiPO₄) 128975-24-6, Lithium manganese nickel oxide (LiMn_{0.5}Ni_{0.5}O₂)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(**battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 9002-84-0, Poly(tetrafluoroethene) 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-14-7, Poly(methyl methacrylate) 9011-17-0 24937-79-9, Poly(vinylidene fluoride) 25034-77-9, Ethylene-propylene-5-methylene-2-norbornene copolymer 25322-68-3, **Polyethylene oxide** 25322-69-4, Polypropylene oxide
RL: NUU (Other use, unclassified); USES (Uses)
(**battery** separators; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 9003-18-3
RL: NUU (Other use, unclassified); USES (Uses)
(nitrile rubber, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 9003-18-3
RL: NUU (Other use, unclassified); USES (Uses)
(nitrile rubber, hydrogenated, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT **96-48-0, γ- Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 2832-49-7, N,N,N',N'-Tetraethylsulfamide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 90076-65-6, LiTFSI 171611-11-3 244761-29-3, Lithium bis(oxalato)borate
RL: NUU (Other use, unclassified); USES (Uses)
(secondary **battery** nonaq. **electrolytes**; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 9003-55-8
RL: NUU (Other use, unclassified); USES (Uses)
(styrene-butadiene rubber, binder, for coating of **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of **battery** electrodes)
- IT 7429-90-5, Aluminum, uses 12597-68-1, Stainless steel, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(substrate, for **battery** electrodes; coating of substrates with active material, binder, and thickener for fabrication of

battery electrodes)
 IT 9004-34-6, Cellulose, uses 37353-59-6, Hydroxymethyl cellulose
 RL: NUU (Other use, unclassified); USES (Uses)
 (thickener, for coating of **battery electrodes**; coating of
 substrates with active material, binder, and thickener for fabrication
 of **battery electrodes**)
 IT 96-48-0, γ - Butyrolactone
 RL: NUU (Other use, unclassified); USES (Uses)
 (secondary **battery** nonaq. **electrolytes**; coating of
 substrates with active material, binder, and thickener for fabrication
 of **battery electrodes**)
 RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 6 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:872542 HCAPLUS

DN 139:352706

TI Lithium ion secondary **battery** having high safety in storing at
 high temperature and excellent **battery** property

IN Sano, Hiroki; Nishikawa, Satoshi; Honmoto, Hiroyuki; Omichi, Takahiro

PA Teijin Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003317802	A2	<u>20031107</u>	JP 2002-122001	20020424
PRAI	JP 2002-122001		<u>20020424</u>		

AB The Li ion secondary **battery** comprises anode from Li-doping and
 undoping C material, cathode from Li-containing transition metal oxide, a
 separator, and a nonaq. **electrolyte**, wherein the separator is a
 composite membrane from polyethylene terephthalate nonwoven fabric and
 organic polymer swelling in the **electrolyte** and the organic solvent
 component of the **electrolyte** is ring-form carbonate solvent.
 The organic polymer is polyvinylidene fluoride, polyacrylonitrile,
polyethylene oxide and/or PMMA type polymer, and the
 ring-form carbonate solvent contains propylene carbonate and/or γ -
butyrolactone and ethylene carbonate.

IC ICM H01M010-40

ICS H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** safety polyethylene terephthalate
 fabric composite separator

IT Membranes, nonbiological

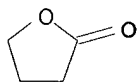
(composite, separator; lithium ion secondary **battery** having
 high safety in storing at high temperature and excellent **battery**
 property)

IT Nonwoven fabrics

Safety

(lithium ion secondary **battery** having high safety in storing
 at high temperature and excellent **battery** property)

- IT Secondary **batteries**
(lithium; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of PET nonwoven fabric and; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT Polyesters, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of nonwoven fabric of; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 14283-07-9
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT 25101-47-7, Chlorotrifluoroethylene-hexafluoropropylene-vinylidene fluoride copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(separator containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT 9011-14-7, PMMA 24937-79-9, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, **Polyethylene oxide**
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of PET nonwoven fabric and; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT 25038-59-9, Polyethylene terephthalate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(separator from composite of nonwoven fabric of; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- IT 96-48-0, γ - Butyrolactone
RL: TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** containing; lithium ion secondary **battery** having high safety in storing at high temperature and excellent **battery** property)
- RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 7 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2003:531595 HCAPLUS
DN 139:103745
TI Secondary nonaqueous **electrolyte battery**
IN Kono, Tatsuoki; Takami, Norio
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF

DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003197257	A2	20030711	JP 2001-398106	20011227
PRAI	JP 2001-398106		20011227		

AB The **battery** has an electrode stack, containing a separator between a cathode and an anode, and an nonaq. **electrolyte** solution; where the **battery** satisfies $K = M/D = 1.2+103-9.8+107$ [D = distance between 2 electrodes; M = area (mm²) of **battery** height + width]; and the **electrolyte** solution is a non-Newtonian fluid.

IC ICM H01M010-40
ICS H01M002-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** nonaq **electrolyte** nonnewtonian fluid

IT Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(anode; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT 111706-40-2, Cobalt lithium oxide (CoLi0-102)
RL: DEV (Device component use); USES (Uses)
(cathode; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

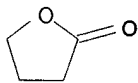
IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 14283-07-9, Lithium tetrafluoroborate 25322-68-3, Polyethylene oxide
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT 9002-88-4, Polyethylene
RL: DEV (Device component use); USES (Uses)
(separator; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

IT 96-48-0, γ - Butyrolactone
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; structure of secondary nonaq. **electrolyte batteries** with controlled surface area and electrode distance)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 8 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2002:945870 HCAPLUS
DN 138:26917
TI Nonaqueous **electrolyte** and secondary nonaqueous

electrolyte battery
 IN Kono, Tatsuoki; Takami, Norio
 PA Toshiba Corp., Japan
 SO Jpn. Kokai Tokkyo Koho, 11 pp.
 CODEN: JKXXAF

DT Patent
 LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002359000	A2	20021213	JP 2001-297422	20010927
	US 2003049540	A1	20030313	US 2002-83372	20020227
PRAI	JP 2001-94051	A	20010328		
	JP 2001-297422	A	20010927		

AB The **electrolyte** solution has an salt dissolved in an solvent mixture, and a **polymer additive** in the solvent mixture; where the **electrolyte** solution is a non-Newtonian fluid with viscosity 7-30000 cp at 20°C. The ratio (p) of ion conductivity to viscosity (σ/η) in the **electrolyte** solution is < 0.1, the solvent mixture contains γ - **butyrolactone**, and the content of the polymer material of the formula $(CH_2CH_2O)_n$ is 0.01-10 % of the solvent mixture The **battery** has an active mass containing cathode, a Li intercalating anode and the above required **electrolyte** solution in between.

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery electrolyte** nonaq solvent

polymer additive; nonaq solvent

butyrolactone polymer additive content

viscosity

IT **Battery electrolytes**

(Li salt **electrolyte** solns. containing **polymer**

additives in γ - **butyrolactone solvent**

mixts. with controlled viscosity for secondary lithium **batteries**)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(Li salt **electrolyte** solns. containing **polymer**

additives in γ - **butyrolactone solvent**

mixts. with controlled viscosity for secondary lithium **batteries**)

IT Carbonaceous materials (technological products)

RL: DEV (Device component use); USES (Uses)

(anode; Li salt **electrolyte** solns. containing **polymer**

additives in γ - **butyrolactone solvent**

mixts. with controlled viscosity for secondary lithium **batteries**)

IT Secondary **batteries**

(lithium; Li salt **electrolyte** solns. containing **polymer**

additives in γ - **butyrolactone solvent**

mixts. with controlled viscosity for secondary lithium **batteries**)

IT 96-48-0, γ - **Butyrolactone** 96-49-1, Ethylene

carbonate 14283-07-9, Lithium tetrafluoroborate 25322-68-3,

Polyethylene oxide

RL: DEV (Device component use); USES (Uses)

(Li salt **electrolyte** solns. containing **polymer**

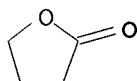
additives in γ - **butyrolactone solvent**

mixts. with controlled viscosity for secondary lithium **batteries**)

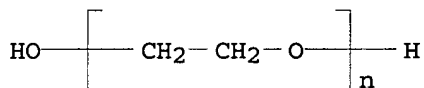
IT 111706-40-2, Cobalt lithium oxide (CoLiO-102)
 RL: DEV (Device component use); USES (Uses)
 (cathode; Li salt **electrolyte** solns. containing **polymer additives** in γ - butyrolactone solvent
 mixts. with controlled viscosity for secondary lithium
batteries)

IT 96-48-0, γ - Butyrolactone 25322-68-3,
 Polyethylene oxide
 RL: DEV (Device component use); USES (Uses)
 (Li salt **electrolyte** solns. containing **polymer additives** in γ - butyrolactone solvent
 mixts. with controlled viscosity for secondary lithium
batteries)

RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS
 CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 9 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2002:833355 HCAPLUS
 DN 137:327466
 TI Polymeric gel **electrolyte** for lithium **battery**
 IN Choi, Young-Min; Kang, Byoung-Hyun; Kim, Jin-Kyoung
 PA S. Korea
 SO U.S. Pat. Appl. Publ., 14 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

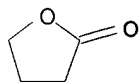
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002160269	A1	20021031	US 2002-131521	20020425
	KR 2002083117	A	20021101	KR 2002-8116	20020215
	CN 1382746	A	20021204	CN 2002-2107597	20020318
	JP 2003017128	A2	20030117	JP 2002-126912	20020426
	JP 3571032	B2	20040929		
PRAI	KR 2001-22674	A	20010426		
	KR 2002-8116	A	20020215		

AB A polymeric gel **electrolyte** and a lithium **battery**
 employing the same are disclosed. The polymeric gel **electrolyte**
 includes a first ionic conductive polymer having a weight-average mol. weight of
 greater than or equal to 5000 and smaller than 100,000, a second ionic
 conductive polymer having a weight-average mol. weight of 100,000 to 5,000,000, and
 an **electrolytic** solution that includes a lithium salt and an organic
 solvent. The first ionic conductive polymer preferably is at least one

polymer selected from polyethyleneglycol di-Me ether, polyethyleneglycol di-Et ether, polyethyleneglycol dimethacrylate, polyethyleneglycol diacrylate, polypropyleneglycol dimethacrylate, polypropyleneglycol diacrylate, and mixts. and combinations thereof, and the second ionic conductive polymer preferably is at least one polymer selected from polyvinylidene fluoride, polyvinylidene fluoride-hexafluoropropylene copolymer, polyurethane, **polyethylene oxide**, polyacrylonitrile, polymethylmethacrylate, polyacrylamide, polyacetate, and mixts. and combinations thereof.

IC ICM H01M010-40
 INCL 429303000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST polymer gel **electrolyte** lithium **battery**
 IT Secondary **batteries**
 (lithium; polymeric gel **electrolyte** for lithium **battery**)
 IT **Battery electrolytes**
 Conducting polymers
 (polymeric gel **electrolyte** for lithium **battery**)
 IT Fluoropolymers, uses
 Polyesters, uses
 Polyoxyalkylenes, uses
 Polyurethanes, uses
 RL: DEV (Device component use); USES (Uses)
 (polymeric gel **electrolyte** for lithium **battery**)
 IT 7440-44-0, Carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (mesocarbon microbeads; polymeric gel **electrolyte** for lithium **battery**)
 IT 75-05-8, Acetonitrile, uses 96-48-0, γ -**Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 872-36-6, Vinylene carbonate 1469-73-4, Propylene sulfite 3741-38-6, Ethylene sulfite 7791-03-9, Lithium perchlorate 9002-84-0, Ptfе 9002-88-4, Polyethylene 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdф 24991-55-7, Polyethylene glycol dimethyl ether 25014-41-9, Polyacrylonitrile 25038-59-9, Polyethylene terephthalate, uses 25322-68-3, **Polyethylene oxide** 25721-76-0, Polyethylene glycol dimethacrylate 25852-49-7, Polypropylene glycol dimethacrylate 28158-16-9, 2-Propenoic acid, 1,2-ethanediyl ester, homopolymer 31073-72-0, Acetic acid, homopolymer 33454-82-9, Lithium triflate 52496-08-9, Polypropylene glycol diacrylate 53609-62-4, Polyethylene glycol diethyl ether 73506-93-1, Diethoxyethane 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (polymeric gel **electrolyte** for lithium **battery**)
 IT 67-64-1, Acetone, uses 67-68-5, Dmsо, uses 68-12-2, Dmf, uses 105-58-8, Diethyl carbonate 109-99-9, Thf, uses 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solvent; polymeric gel **electrolyte** for lithium **battery**)
 IT 96-48-0, γ - **Butyrolactone**
 RL: DEV (Device component use); USES (Uses)
 (polymeric gel **electrolyte** for lithium **battery**)
 RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 10 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:209797 HCAPLUS

DN 132:224883

TI Preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors

IN Ishiko, Eriko; Kono, Michiyuki

PA Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan

SO Eur. Pat. Appl., 9 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 989620	A2	20000329	EP 1999-113354	19990709
	EP 989620	A3	20020306		
	EP 989620	B1	20040128		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000100246	A2	20000407	JP 1998-267999	19980922
	US 6329103	B1	20011211	US 1999-353995	19990715
	CA 2279309	C	20040106	CA 1999-2279309	19990729
	CA 2279309	AA	20000322		
PRAI	JP 1998-267999	A	19980922		

AB A solid **electrolyte** is disclosed, which comprises a crosslinked product of an alkylene oxide polymer having a polymerizable double bond at the terminal and/or in the side chain, and an **electrolytic** salt. In this, the alkylene oxide polymer is thermally crosslinked in the presence of an organic peroxide initiator having an activation energy of at most 35 Kcal/mol and having a half-value period of 10 h at a temperature not higher than 50°.

IC ICM H01M006-18

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 74, 76

ST polymer **electrolyte battery**; capacitor polymer **electrolyte**; electrochromic device polymer **electrolyte**; sensor polymer **electrolyte**

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(acrylate-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(derivative, acryloyl- or methacryloyl-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and sensors)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(methacryloyl-terminated; preparation of solid polymer **electrolyte** for **batteries**, capacitors, electrochromic devices, and

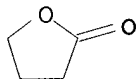
sensors)

IT **Battery electrolytes**
 Capacitors
 Electrochromic devices
 Polymer **electrolytes**
 Sensors
 (preparation of solid polymer **electrolyte** for **batteries**,
 capacitors, electrochromic devices, and sensors)

IT **96-48-0, γ - Butyrolactone** 96-49-1, Ethylene
 carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate
 25322-68-3D, **Polyethylene oxide**, derivative, acryloyl- or
 methacryloyl-terminated 33454-82-9, Lithium triflate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (preparation of solid polymer **electrolyte** for **batteries**,
 capacitors, electrochromic devices, and sensors)

IT **96-48-0, γ - Butyrolactone**
 RL: DEV (Device component use); USES (Uses)
 (preparation of solid polymer **electrolyte** for **batteries**,
 capacitors, electrochromic devices, and sensors)

RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 11 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:166259 HCAPLUS

DN 132:210209

TI Secondary nonaqueous-**electrolyte batteries** with
electrolytes containing cyanoethoxy compounds

IN Kobayashi, Aya; Izuchi, Shuichi

PA Yuasa Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

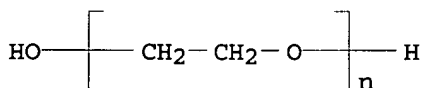
DT Patent

LA Japanese

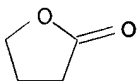
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000077096	A2	20000314	JP 1998-244674	19980831
PRAI	JP 1998-244674		19980831		
OS	MARPAT 132:210209				
AB	Claimed batteries are equipped with electrolytes containing cyanoethoxy compds. $R(OC_2H_4CN)_n$ ($n = 1-4$; $R = CmH_{2m+2-n}$, $CmH_{2m+2-n}(OC_2H_4)_p$, $CmH_{2m+2-n}CO$, or $CmH_{2m+2-n}OCO$; $m = 1-3$; $p = 1-4$) as nonaq. solvents for Li salts. Optionally, the batteries are equipped with gelled polymer electrolytes . The batteries have long cycle life at low temperature				
IC	ICM H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	cyanoethoxy compd nonaq electrolyte solvent battery ; lithium battery electrolyte solvent cyanoethoxy compd				
IT	Secondary batteries				

- (lithium; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT **Battery electrolytes**
(nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(trifunctional acrylates, lithium complexes, gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT 14283-07-9, Lithium tetrafluoroborate
RL: DEV (Device component use); USES (Uses)
(**electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes
RL: DEV (Device component use); USES (Uses)
(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-67-8 1656-48-0, Bis-2-cyanoethyl ether 2141-62-0 3386-87-6 5325-93-9 20597-73-3 32846-35-8, Bis 2-cyanoethyl carbonate 35633-51-3 260362-83-2
RL: DEV (Device component use); USES (Uses)
(**solvents**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- IT 25322-68-3D, Polyethylene glycol, trifunctional acrylates, lithium complexes
RL: DEV (Device component use); USES (Uses)
(gelled **electrolytes**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- RN 25322-68-3 HCAPLUS
- CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



- IT 96-48-0, γ - Butyrolactone
RL: DEV (Device component use); USES (Uses)
(**solvents**; nonaq. **batteries** with **electrolytes** containing cyanoethoxy compds. for long cycle life at low temperature)
- RN 96-48-0 HCAPLUS
- CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 12 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1999:499496 HCAPLUS
DN 131:288823
TI The measurement of self-diffusion coefficients of various species by the pulse gradient-field spin-echo NMR method. The motions of ions in the **electrolytes** for lithium **batteries**
AU Hayamizu, Kikuko; Aihara, Yuichi
CS Natl. Inst. Mater. Chem. Res., Tsukuba, 305-8565, Japan
SO Materia (1999), 38(7), 555-558
CODEN: MTERE2; ISSN: 1340-2625
PB Nippon Kinzoku Gakkai
DT Journal
LA Japanese
AB The title PGSE-NMR method was applied to the measurements of self-diffusion coefficient (D) of ions in the **electrolytes** for Li **batteries**. The NMR measurement nuclei were ^7Li for Li^+ , ^{19}F for $\text{N}(\text{SO}_2\text{CF}_3)_2^-$ and ^1H for solvents used for the **batteries**, resp. The measured D values of 14 organic solvents and Li^+ and $\text{N}(\text{SO}_2\text{CF}_3)_2^-$ in their solvents were inversely proportional to the solvent viscosities according to the Stokes-Einstein equation. The D ratio of Li^+ to the solvent was >2 in ethylene carbonate and γ -butyrolactone, indicating 2 mols. of the **solvents** can solvate Li^+ and that for $\text{N}(\text{SO}_2\text{CF}_3)_2^-$ was 1.2 in every solvents, indicating the less solvation to the anion. The molar elec. conds. of $\text{LiN}(\text{SO}_2\text{CF}_3)_2$ evaluated from the D values in organic solvents using the Nernst-Einstein equation were different from those obtained by electrochem. a.c. method. The differences are attributed to the dissociation degrees of the **electrolyte**. The PGSE-NMR method was also applied to polymer **electrolyte** gels using poly(ethylene oxide) as a polymer matrix.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 65
ST lithium **battery electrolyte** ion motion; self diffusion
coeff lithium **battery electrolyte**
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT **Battery electrolytes**
Electric conductivity
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT Diffusion
(self-; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 25322-68-3
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 96-48-0 96-49-1, Ethylene carbonate 108-29-2, γ -Valerolactone 108-32-7, Propylene carbonate 109-99-9, uses 110-71-4 111-96-6, Diglyme 112-49-2, Triglyme 123-91-1, 1,4-Dioxane, uses 616-38-6, Dimethyl carbonate 872-50-4, n-Methylpyrrolidone, uses 4437-85-8, Butylene carbonate
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(measurements of self-diffusion coefficient of ions in **electrolytes** for Li **batteries**)
IT 17341-24-1, Lithium(1+), processes 98837-98-0
RL: PEP (Physical, engineering or chemical process); PROC (Process)

(measurements of self-diffusion coefficient of ions in electrolytes for Li batteries)

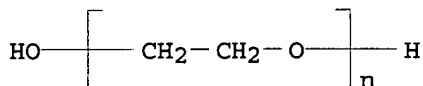
IT 25322-68-3

RL: DEV (Device component use); USES (Uses)

(electrolyte; measurements of self-diffusion coefficient of ions in electrolytes for Li batteries)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



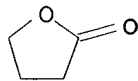
IT 96-48-0

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(measurements of self-diffusion coefficient of ions in electrolytes for Li batteries)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 13 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1998:781401 HCAPLUS

DN 130:168955

TI Lithium ion conduction in PEO-salt electrolytes gelled with PAN

AU Choi, B. K.; Shin, K. H.; Kim, Y. W.

CS Department of Science Education, Dankook University, Seoul, 140-714, S. Korea

SO Solid State Ionics (1998), 113-115, 123-127

CODEN: SSIOD3; ISSN: 0167-2738

PB Elsevier Science B.V.

DT Journal

LA English

AB Hybrid solid electrolyte films consisting of poly(ethylene oxide) (PEO), LiClO_4 , a mixture of ethylene carbonate (EC) and γ -butyrolactone (BL) and polyacrylonitrile (PAN) were examined in order to obtain the best compromise between high conductivity, homogeneity and dimensional stability. Measurements of elec. conductivity and differential scanning calorimetry have been carried out. When the ratio of $\text{LiClO}_4/(\text{EC/BL})$ is large, the electrolyte films are completely amorphous at room temperature and in the other cases, they are partially crystalline. The materials having higher EC/BL content are more likely to be a gel-electrolyte than a plasticized PEO-salt electrolyte. The Li^+ ions in these films seem to migrate primarily through the solvent domains as in the gel-electrolytes. The highest room temperature conductivity of $2.0 \times 10^{-3} \text{ S cm}^{-1}$ is found for a film of 31PEO-9 LiClO_4 -50EC/BL-10PAN. This film has a similar conductivity value as compared with PAN-based gel electrolytes, but with a better dimensional stability.

CC 37-5 (Plastics Manufacture and Processing)

ST lithium ionic conduction polyethylene oxide polyacrylonitrile; ethylene

carbonate lithium ionic cond polyoxyethylene; butyrolactone lithium ionic cond polyoxyethylene; glass temp polyethylene oxide electrolyte

IT Glass transition temperature
Ionic conductivity
Melting point
Recrystallization
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

IT Polyoxyalkylenes, properties
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

IT 7791-03-9, Lithium perchlorate
RL: MOA (Modifier or additive use); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

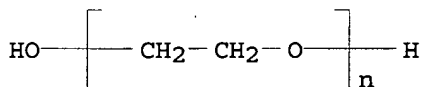
IT 96-48-0, Butylolactone 96-49-1, Ethylene carbonate
RL: NUU (Other use, unclassified); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

IT 25014-41-9, Polyacrylonitrile 25322-68-3, Poly(ethylene oxide)
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

IT 25322-68-3, Poly(ethylene oxide)
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(DSC and elec. conductivity measurement of poly(ethylene oxide)-lithium perchlorate-ethylene carbonate-butylolactone-polyacrylonitrile electrolyte film)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)

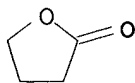


RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 14 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1998:395225 HCAPLUS
DN 129:69855
TI Mechanisms of ionic conduction related to the structure of the gel electrolytes composed of crosslinked PEO matrix
AU Aihara, Yuichi; Hayamizu, Kikuko; Arai, Shigemasa; Price, William S.
CS Res. Deve. Cent., Yuasa Corp., Takatsuki, Japan
SO Yuasa Jiho (1998), 84, 5-11
CODEN: YUJIAX; ISSN: 0513-6342
PB Yuasa Koporeshon
DT Journal
LA Japanese
AB The ionic conduction mechanism of gel electrolytes was studied

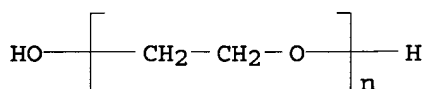
by using the AC impedance method, differential scanning calorimetry, and pulse field gradient (PFG) NMR method. The gel **electrolytes** based on the typical crosslinked poly(ethylene oxide) (PEO) system were obtained from polyethylene glycol diacrylate in the presence of LiF and γ -butyrolactone. The gel **electrolytes** were obtained as a thin film form by the radical polymerization method. This **electrolyte** has an ionic conductivity of $4.0 \times 10^{-3} \text{ Scm}^{-1}$ at 20° and good temperature properties. The diffusion coefficient was determined by using PFG-NMR. Comparison of data between δ_{obs} which was determined from the AC impedance method and δ_{nmr} which was determined by using Nernst-Einstein equation from diffusion coeffs. was considered. DSC curves showed several exothermic peaks as the different state of the solvent. Macroscopic homogeneity of the gel was confirmed for the samples of different salt concns. The ionic conductivity, diffusion coefficient and DSC data indicated interaction between the polymer and lithium cations in the gel system with a high solvent content. The ionic conduction mechanism as related to the gel structure in the PEO-gel system is proposed, and the difference of the ion existence between gels and liquid **electrolytes** was discussed.

- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
- ST **battery gel electrolyte ionic conduction;**
polyethylene oxide gel electrolyte ionic cond
- IT **Battery electrolytes**
Diffusion
Ionic conductivity
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)
- IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)
- IT 25322-68-3, PEO 26570-48-9, Polyethylene glycol diacrylate
RL: DEV (Device component use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)
- IT 96-48-0, γ -Butyrolactone 7789-24-4, Lithium fluoride, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)
- IT 96-48-0, γ -Butyrolactone
RL: TEM (Technical or engineered material use); USES (Uses)
(mechanisms of ionic conduction related to the structure of the gel **electrolytes** composed of crosslinked PEO matrix)
- RN 96-48-0 HCAPLUS
- CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



- L30 ANSWER 15 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
- AN 1998:135022 HCAPLUS
- DN 128:271140
- TI Diffusion, conductivity and DSC studies of a polymer gel electrolyte composed of cross-linked PEO, γ -butyrolactone and LiBF_4

AU Hayamizu, Kikuko; Aihara, Yuichi; Arai, Shigemasa; Price, William S.
CS National Institute of Materials and Chemical Research, 1-1 Higashi,
Tsukuba, 305, Japan
SO Solid State Ionics (1998), 107(1,2), 1-12
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB The gel electrolyte system composed of γ -butyrolactone (GBL), LiBF₄,
and crosslinked acrylated poly(ethylene oxide) (PEO) with a mol. weight of
4000 (PEO4) was studied using the pulsed field gradient (PFG) NMR method
to measure the diffusion coeffs. The NMR spin-lattice relaxation times,
ionic conductivities and thermal behavior were also measured. Seven reference
samples were also prepared pure GBL (sample A), 0.5, 1 and 1.5 M LiBF₄ in
GBL (i.e., solution electrolyte; samples B-D), 20 weight% PEO4 in GBL (sample
E), 1 M LiBF₄ plus 20 weight% PEO4 in GBL (sample F) and a gel without the
salt (sample G), in addition to three gel electrolyte samples containing 0.5, 1,
and 1.5 M concns. of LiBF₄ in GBL with 20 weight% crosslinked PEO4 (samples
H-J). Importantly, using ¹H, ⁷Li, and ¹⁹F PFG NMR the diffusion coeffs.
of all the species present were able to be measured. The diffusion
coeffs. were sensitive to the salt concentration and the crosslinking of the
polymer. The Li and BF₄ ions are solvated with GBL even in the gel state.
The deviation of the measured conductivities from the values calculated using
the Nernst-Einstein equation reflects the effects of ion association. It was
observed that at least, at low salt concns., the polymer aids in the dissociation
of the salt. By considering all of the exptl. data obtained, we show that
in the gel system the BF₄ ions exist predominantly in the solvent while
the motion of the Li ions, although solvated in GBL, is strongly associated
with the polymer. From the combination of the conductivity and diffusion
measurements we were able to obtain values for the dissociation consts. for
the salt dissolved in the GBL and in the gel samples.
CC 37-5 (Plastics Manufacture and Processing)
ST polyoxyethylene butyrolactone lithium tetrafluoroborate property;
diffusion polyoxyethylene butyrolactone lithium tetrafluoroborate; ionic
cond polyoxyethylene butyrolactone lithium tetrafluoroborate
IT Diffusion
Glass transition temperature
Ionic conductivity
Spin-lattice relaxation
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT Polyoxyalkylenes, properties
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT 96-48-0, γ -Butyrolactone 14283-07-9, Lithium tetrafluoroborate
25322-68-3, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
IT 25322-68-3, Poly(ethylene oxide)
RL: PRP (Properties)
(diffusion and conductivity and DSC studies of crosslinked poly(ethylene
oxide)-butyrolactone-LiBF₄ gel electrolyte)
RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX
NAME)



RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L30 ANSWER 16 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1997:283977 HCAPLUS

DN 126:280321

TI Lithium **batteries** using lithium perchlorate

IN Aihara, Juichi

PA Yuasa Battery Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

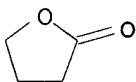
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09063648	A2	19970307	JP 1995-221606	19950830
PRAI	JP 1995-221606		19950830		
AB	The batteries use gel electrolytes containing polymer solid electrolytes and organic solvents, and the concentration of the electrolytes enables LiClO ₄ to dissolve even after removal of the organic solvents. Although the batteries use dangerous LiClO ₄ , the electrolytes contribute to safety.				
IC	ICM H01M010-40				
	ICS H01M010-40; H01M006-18				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium battery gel electrolyte safety; perchlorate lithium polymer solid electrolyte battery				
IT	Battery electrolytes (Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	7791-03-9, Lithium perchlorate RL: DEV (Device component use); USES (Uses) (Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	96-48-0, γ- Butyrolactone 25322-68-3D, Polyethylene oxide, acrylate esters RL: DEV (Device component use); USES (Uses) (electrolyte component; Li batteries using lithium perchlorate and gel electrolytes for safety)				
IT	96-48-0, γ- Butyrolactone RL: DEV (Device component use); USES (Uses) (electrolyte component; Li batteries using lithium perchlorate and gel electrolytes for safety)				
RN	96-48-0 HCAPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



L30 ANSWER 17 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1997:61157 HCAPLUS

DN 126:77522

TI Gel electrolytes for lithium batteries

IN Aihara, Juichi

PA Yuasa Battery Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08298126	A2	19961112	JP 1995-104489	19950428
PRAI	JP 1995-104489		19950428		

AB The gel electrolytes are composed of a mixture containing a polymer and an organic electrolyte solution containing γ -butyrolactone and cyclic (carbonate) esters. The gel may be formed by crosslinking between the polymer and the ester containing ethylene oxide or propylene oxide units. The electrolytes have good low-temperature properties.

IC ICM H01M006-22

ICS C08F299-02; C08K005-101; C08L071-02; H01M006-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST battery gel electrolyte polymer ester butyrolactone

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(trifunctional acrylate; γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT Battery electrolytes

(γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT Lactones

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT 463-79-6D, Carbonic acid, esters, uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES
(Uses)

(cyclic; γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT 96-48-0, γ -Butyrolactone

RL: DEV (Device component use); USES (Uses)

(γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT 25322-68-3D, trifunctional acrylate 106392-12-5, Ethylene oxide-propylene oxide block copolymer

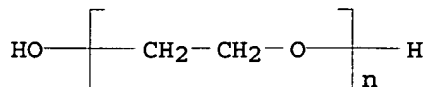
RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

IT 25322-68-3D, trifunctional acrylate

RL: DEV (Device component use); POF (Polymer in formulation); USES (Uses)
(γ -butyrolactone containing gel electrolytes from polymers and cyclic esters for lithium batteries)

RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 18 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:483502 HCAPLUS

DN 125:119517

TI **Batteries** comprising porous negative and positive electrodes and liquid and solid **electrolyte**, and their manufacture

IN Bronoel, Guy

PA Laboratoires Sorapec, Fr.

SO Fr. Demande, 13 pp.

CODEN: FRXXBL

DT Patent

LA French

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2727246	A1	19960524	FR 1994-13760	19941117
PRAI	FR 1994-13760		19941117		

AB In the **batteries**, comprising ≥ 1 porous neg. electrodes that may be intercalated with ≥ 1 alkali metals or alkaline earth metals, and ≥ 1 porous pos. electrodes comprising ≥ 1 active compds. that may contain the ions of the ≥ 1 alkali metals or alkaline earth metals, the internal and external surface of the neg. and/or pos. electrode is coated with a film of solid **electrolyte**, and the space remaining between, and in the pores of, the electrodes is filled with a liquid **electrolyte**. In the manufacture of the **batteries**, the neg. and/or pos. electrode is coated with a solution of the solid **electrolyte**, and the solvent removed. This method prevents degradation of the liquid **electrolyte**, especially at elevated temps., permits operation at a c.d. close to that of **batteries** containing a liquid **electrolyte**, increases elec. efficiency, and decreases dendrite growth. The **batteries** are suitable for use in elec. vehicles. A **battery** was manufactured using PWB3 (carbon fiber textiles) for the neg. electrodes, and the pos. electrodes were manufactured by introducing 3 g of a mixture consisting of V2O5 powder 60, carbon black 20, (CF3SO2)2NLi powder 17, and PTFE powder 3 weight% into a cellular NI plate. The separators consisted of nonwoven polypropene, and the assembly was immersed in an acetonitrile solution containing 3 weight% **polyethylene oxide** (mol. weight 5 + 106) and 4 weight% (CF3SO2)2NLi.

IC ICM H01M004-24

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **battery** porous electrode coating; PWB3 carbon fiber textile neg electrode; vanadium pentoxide porous pos electrode; PTFE powder porous pos electrode; **polyethylene oxide** porous pos electrode; **electrolyte** porous electrode; acetonitrile porous electrode coating; lithium trifluoromethanesulfonate imide **electrolyte**

IT Polyethers, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT **Batteries**, secondary

(porous neg. and pos. electrodes and liquid and solid **electrolyte** for)

IT Coating materials

(solid **electrolytes**; porous neg. and pos. electrodes and liquid

and solid **electrolyte** for secondary **batteries**)

IT Electrodes
(**battery**, porous, porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT **Electrolytes**
(solid, coating; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT Carbon fibers
(textiles, neg. electrodes; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 1314-62-1, Vanadium pentoxide, uses 12037-42-2, Vanadium oxide (V6013)
39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide
52627-24-4, Cobalt lithium oxide
RL: TEM (Technical or engineered material use); USES (Uses)
(cellular metal pos. electrodes containing; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 25322-68-3, **Polyethylene oxide**
RL: TEM (Technical or engineered material use); USES (Uses)
(coatings; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(neg. electrode; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 2169-38-2, Lithium tetramethylborate 14485-20-2, Lithium tetraphenylborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate
RL: TEM (Technical or engineered material use); USES (Uses)
(porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

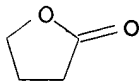
IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 11105-45-6
RL: TEM (Technical or engineered material use); USES (Uses)
(porous, pos. electrodes; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6
RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolyte** films containing; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 68-12-2, DMF, uses 96-48-0, **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-71-4 646-06-0, Dioxolane
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

IT 96-48-0, **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(solvent; porous neg. and pos. electrodes and liquid and solid **electrolyte** for secondary **batteries**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 19 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:273818 HCAPLUS

DN 124:327255

TI Gelled **electrolyte** with good mechanical strength

IN Osada, Manabu; Akashi, Hiroyuki; Takemori, Shinichi; Sekai, Koji; Ozawa, Hitoshi; Nakajima, Kaoru; Karashima, Shuichi

PA Sumitomo Seika KK, Japan; Sumitomo Seika Chemicals Co., Ltd.; Sony Corp.

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08064028	A2	19960308	JP 1994-203249	19940829
	JP 3481685	B2	20031222		
PRAI	JP 1994-203249		19940829		

AB The **electrolyte** is obtained by treating a polyalkylene oxide with weight average mol. weight 1000-1,000,000, a polyol, and an isocyanate compound in the presence of an amine- and/or Sn-containing catalyst, molding 100 parts of the resulting water-absorbing thermoplastic polymer and 0.1-20 parts of inorg. oxide, irradiating with 5-500-kGy electron beam, and impregnating with a solution containing an **electrolyte** and a nonaq. organic solvent. The **electrolyte** is useful for Li **batteries**, electrochem. devices, etc. The **electrolyte** showed high gel strength and good ionic conductivity

IC ICM H01B001-06

ICS C08G018-48; C08L075-08; H01M006-18

CC 72-3 (Electrochemistry)

Section cross-reference(s): 38, 52

ST polyalkylene polyurethane blend oxide **electrolyte**; electron beam crosslinking polyalkylene polyurethane **electrolyte**

IT Absorbents

(for water; gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

IT **Battery electrolytes**

Crosslinking

Electron beam

Gels

(gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

IT **Electrolytes**(manufacture of gelled **electrolyte** with good mech. strength)

IT Urethane polymers, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(polyoxyalkylene-, gelled **electrolyte** containing electron-beam-crosslinked polyalkylene-polyurethane and inorg. oxide with good gel strength)

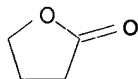
IT 77-58-7, Dibutyltin dilaurate 102-71-6, Triethanolamine, uses
121-44-8, Triethylamine, uses 280-57-9, Triethylenediamine 301-10-0,
Stannous octoate 1067-33-0

RL: CAT (Catalyst use); USES (Uses)

(catalysts; in manufacture of gelled **electrolyte** with good mech. strength)

IT 1309-48-4, Magnesium oxide, uses 1314-13-2, Finex 25, uses 1344-28-1,
Aluminum oxide, uses 7791-03-9, Lithium perchlorate 13463-67-7, MT
500B, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium

hexafluorophosphate 84135-65-9, Finesil T 32 112153-70-5, Aerosil R 805
 RL: NUU (Other use, unclassified); USES (Uses)
 (in manufacture of gelled **electrolyte** with good mech. strength)
 IT 107040-16-4 107678-92-2 176676-78-1, Hexamethylene diisocyanate-1,9-nonanediol-**polyethylene oxide** block copolymer 176676-79-2, 4,4'-Diphenylmethane diisocyanate-ethylene glycol-**polyethylene oxide**-polypropylene oxide block copolymer 176676-80-5
 RL: TEM (Technical or engineered material use); USES (Uses)
 (in manufacture of gelled **electrolyte** with good mech. strength)
 IT 96-48-0, γ - Butyrolactone 108-32-7, Propylene carbonate
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; in manufacture of gelled **electrolyte** with good mech. strength)
 IT 96-48-0, γ - Butyrolactone
 RL: NUU (Other use, unclassified); USES (Uses)
 (solvent; in manufacture of gelled **electrolyte** with good mech. strength)
 RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 20 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1996:148076 HCAPLUS
 DN 124:181166
 TI Solid-**electrolyte batteries**
 IN Yamazaki, Mikya; Fujimoto, Masahisa; Shoji, Yoshihiro; Yoshimura, Seiji; Nishio, Koji; Saito, Toshihiko
 PA Sanyo Electric Co, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07320746	A2	19951208	JP 1994-131420	19940520
PRAI	JP 1994-131420		19940520		

AB The **batteries** comprise Li anodes and (1) polymer solid **electrolytes** which are composites of carbonate ester group- or lactone group-introduced polymers and **electrolyte** salts or (2) polymer gel-type **electrolytes** comprising carbonate ester group- or lactone group-introduced polymers impregnated with **electrolyte** solns. containing **electrolyte** salts and nonprotonic solvents. The carbonate ester group may be ethylene carbonate, propylene carbonate, di-Me carbonate, or di-Et carbonate. The lactone group may be γ -butyrolactone. The polymers may be polyethylene, polystyrene, **polyethylene oxide**, or polyoxymethylene. The **batteries** have high high-rate discharge capacity.
 IC ICM H01M006-18
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

ST carbonate solid polymer **electrolyte battery**; lactone
solid polymer **electrolyte battery**

IT **Battery electrolytes**
(polymers containing carbonate ester group or lactone group for solid
electrolytes or gel-type solid **electrolytes** for
batteries for high-rate discharge capacity)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(anode; polymers containing carbonate ester group or lactone group for
solid **electrolytes** or gel-type solid **electrolytes**
for **batteries** for high-rate discharge capacity)

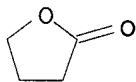
IT 9002-81-7, Polyoxymethylene 9002-88-4, Polyethylene 9003-53-6,
Polystyrene 25322-68-3, **Polyethylene oxide**
RL: DEV (Device component use); USES (Uses)
(carbonate ester- or lactone-introduced; polymers containing carbonate
ester group or lactone group for solid **electrolytes** or
gel-type solid **electrolytes** for **batteries** for
high-rate discharge capacity)

IT 7791-03-9, Lithium perchlorate
RL: DEV (Device component use); USES (Uses)
(**electrolyte**; polymers containing carbonate ester group or
lactone group for solid **electrolytes** or gel-type solid
electrolytes for **batteries** for high-rate discharge
capacity)

IT **96-48-0, γ - Butyrolactone** 96-49-1, Ethylene
carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
616-38-6, Dimethyl carbonate
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or
lactone group for solid **electrolytes** or gel-type solid
electrolytes for **batteries** for high-rate discharge
capacity)

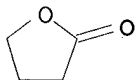
IT **96-48-0, γ - Butyrolactone**
RL: DEV (Device component use); USES (Uses)
(polymers introduced with; polymers containing carbonate ester group or
lactone group for solid **electrolytes** or gel-type solid
electrolytes for **batteries** for high-rate discharge
capacity)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

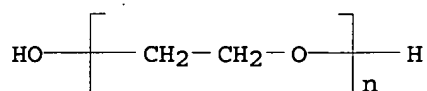


L30 ANSWER 21 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1996:138049 HCAPLUS
DN 124:181143
TI Gelled **electrolyte** lithium **batteries**
IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito,
Toshihiko
PA Sanyo Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07320750	A2	19951208	JP 1994-131432	19940520
	JP 3384616	B2	20030310		
PRAI	JP 1994-131432		19940520		
AB	The batteries use a gelled polymer electrolyte containing an electrolyte salt and an aprotic solvent mixture comprising 40-80 volume% of a high b.p. solvent selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ -butyrolactone, and sulfolane and 5-50 volume% each of ≥ 2 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, and Et Me carbonate. The polymer may be polyethylene oxide , polypropylene oxide , or polyethylenimine . The batteries have high capacity at high rate discharging.				
IC	ICM H01M006-18				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	lithium battery polymer gelled electrolyte ; aprotic solvent gelled polymer electrolyte battery				
IT	Battery electrolytes (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)				
IT	Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)				
IT	96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 25322-68-3, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide) RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)				
IT	96-48-0, γ -Butyrolactone 25322-68-3, Poly(ethylene oxide) RL: DEV (Device component use); USES (Uses) (aprotic solvent mixts. for gelled polymer electrolytes for lithium batteries)				
RN	96-48-0 HCAPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



RN 25322-68-3 HCAPLUS
CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 22 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:138048 HCAPLUS

DN 124:181142

TI Gelled **electrolyte** lithium **batteries**

IN Yoshimura, Seiji; Shoji, Yoshihiro; Yamazaki, Mikya; Nishio, Koji; Saito, Toshihiko

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07320749	A2	19951208	JP 1994-131431	19940520
	JP 3384615	B2	20030310		
PRAI	JP 1994-131431		19940520		

AB The **batteries** use a gelled polymer **electrolyte** impregnated with an **electrolyte** solution containing an **electrolyte** salt and an aprotic solvent mixture containing 5-50 volume% each of 2 high b.p. solvents selected from ethylene carbonate, propylene carbonate, butylene carbonate, γ -butyrolactone, and sulfolane and 10-50 volume% of 1 low b.p. solvent selected from 1,2-dimethoxyethane, 1,2-diethoxyethane, 1,2-ethoxymethoxyethane, THF, 2-Me THF, 1,3-dioxolane, 4-methyl-1,3-dioxolane, di-Me carbonate, di-Et carbonate, or Et Me carbonate. The polymer may be **polyethylene oxide**, polypropylene oxide, or polyethyleneimine. The **batteries** have high capacity at high rate discharging.

IC ICM H01M006-18

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery** polymer gelled **electrolyte**; aprotic solvent gelled polymer **electrolyte battery**

IT **Battery electrolytes**

(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)

IT Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -

Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 4437-85-8, Butylene carbonate 5137-45-1, 1,2-Ethoxymethoxyethane 9002-98-6 25322-68-3, Poly(ethylene oxide) 25322-69-4, Poly(propylene oxide)

RL: DEV (Device component use); USES (Uses)

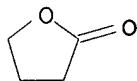
(aprotic solvent mixts. for gelled polymer **electrolytes** for lithium **batteries**)

IT 96-48-0, γ -Butyrolactone 25322-68-3, Poly(ethylene oxide)

RL: DEV (Device component use); USES (Uses)
(aprotic solvent mixts. for gelled polymer
electrolytes for lithium batteries)

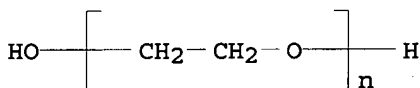
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 25322-68-3 HCAPLUS

CN Poly(oxy-1,2-ethanediyl), α -hydro- ω -hydroxy- (9CI) (CA INDEX NAME)



L30 ANSWER 23 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1996:102519 HCAPLUS

DN 124:119674

TI Aromatic polyamide-based ion-conductive films and precursor film therefor

IN Muraoka, Shigemitsu; Hamada, Masami

PA Asahi Kasei Kogyo K K, Japan

SO PCT Int. Appl.; 25 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9531499	A1	19951123	WO 1995-JP958	19950518
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 760383	A1	19970305	EP 1995-918745	19950518
	EP 760383	B1	20020807		
	R: DE, FR, GB, NL				
	US 5834112	A	19981110	US 1997-737159	19970226
PRAI	JP 1994-103631	A	19940518		
	JP 1994-119768	A	19940601		
	WO 1995-JP958	W	19950518		

AB The title films, with good heat resistance and mech. strength, useful as solid **electrolytes** for secondary alkaline **batteries**, etc., comprise 20-70% aromatic polyamides (e.g., p-phenylenediamine-terephthalic acid copolymer), **electrolytes** (e.g., LiCl, NaOH, LiNO₃, LiBF₄), and solvents (e.g., **polyethylene oxide**, water, propylene carbonate-ethylene carbonate- γ -butyrolactone mixture) and optionally laminated with **electrolyte**-containing polymer layers (e.g., of polycarbonates).

IC ICM C08J005-18

ICS C08L077-10; B32B027-34; H01B001-20

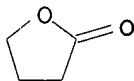
ICA H01M006-18

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 76

ST arom polyamide film **battery separator**; **electrolyte**

- arom polyamide **battery** separator; lithium chloride arom polyamide film; sodium hydroxide arom polyamide film; nitrate lithium arom polyamide film; boron lithium fluoride arom polyamide film; heat resistance arom polyamide film; ion conductive arom polyamide film; polycarbonate arom polyamide laminate
- IT **Batteries**, secondary
Electric conductors
Electrolytes
(aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT Polycarbonates, uses
RL: PEP (Physical, engineering or chemical process); POF (Polymer in formulation); PRP (Properties); PROC (Process); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT Alkali metal compounds
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(**electrolytes**; aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT Polyamides, uses
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic, aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT 1310-73-2, Sodium hydroxide, uses 7447-41-8, Lithium chloride, uses 7790-69-4, Lithium nitrate 14283-07-9
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT 24938-64-5, p-Phenylenediamine-terephthalic acid copolymer, SRU 25035-37-4, p-Phenylenediamine-terephthalic acid copolymer
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT **96-48-0, γ - Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7732-18-5, Water, uses 25322-68-3, **Polyethylene oxide**
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)
- IT **96-48-0, γ - Butyrolactone**
RL: NUU (Other use, unclassified); USES (Uses)
(solvents; aromatic polyamide-based ion-conductive films and precursor film therefor)
- RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 24 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1994:537503 HCAPLUS
DN 121:137503
TI An ionic conductive polymer **electrolyte**
IN Kanbara, Teruhisa; Takeyama, Kenichi; Tsubaki, Yuichiro

PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Eur. Pat. Appl., 37 pp.
 CODEN: EPXXDW

DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 579921	A1	19940126	EP 1993-108097	19930518
	EP 579921	B1	20030102		
	R: DE, DK, FR, GB				
	JP 06045190	A2	19940218	JP 1992-196754	19920723
	JP 06203874	A2	19940722	JP 1992-348114	19921228
	JP 3269146	B2	20020325		
	US 5538811	A	19960723	US 1993-62782	19930514
	CN 1083259	A	19940302	CN 1993-107708	19930518
	CN 1063871	B	20010328		
	EP 971427	A1	20000112	EP 1999-115038	19930518
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE				
PRAI	JP 1992-196754	A	19920723		
	JP 1992-348114	A	19921228		
	EP 1993-108097	A3	19930518		
AB	The electrolyte contains a polymer having an ether-type oxygen, especially a random ethylene oxide-propylene oxide copolymer, and a plasticizer. The plasticizer is ≥ 1 compound described by the formulas $\text{HO}(\text{C}_2\text{H}_4\text{O})_n\text{H}$ where n is 2, 3, 4 or 5; $\text{RO}(\text{C}_2\text{H}_4\text{O})_n\text{H}$ where R is CH_3 , C_2H_5 , C_3H_7 or C_4H_9 and n is 3, 4 or 5; $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n\text{R}_2$ where $\text{R}_1=\text{R}_2=\text{CH}_3$ and n is 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_2\text{H}_5$ and n is 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_3\text{H}_7$ and n is 3, 4, 5 or 6 or $\text{R}_1=\text{R}_2=\text{C}_4\text{H}_9$ and n is 2, 3, 4 or 5 or $\text{R}_1=\text{CH}_3$, $\text{R}_2=\text{C}_4\text{H}_9$, and n is 4, 5 or 6; $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n(\text{C}_3\text{H}_6\text{O})_m\text{H}$ where n+m is 2, 3, 4 or 5 and $\text{R}_1=\text{CH}_3$, C_2H_5 , C_3H_7 or C_4H_9 ; and $\text{R}_1\text{O}(\text{C}_2\text{H}_4\text{O})_n(\text{C}_3\text{H}_6\text{O})_m\text{R}_2$ where n+m is 2, 3, 4, or 5 and $\text{R}_1=\text{R}_2=\text{CH}_3$.				
IC	ICM H01M006-18				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	electrolyte polymer polyether plasticizer				
IT	Polyethers, uses				
	RL: USES (Uses)				
	(crosslinked, electrolyte containing random, and plasticizers)				
IT	Battery electrolytes				
	(ionic conductive polymeric, containing plasticizers)				
IT	Electric conductors, polymeric				
	(ionic, random ethylene oxide-propylene oxide polymers and plasticizers as)				
IT	9003-11-6, Ethylene oxide-propylene oxide copolymer 9082-00-2, Ethylene oxide-propylene oxide copolymer, glycerol ether				
	RL: USES (Uses)				
	(electrolyte containing plasticizers and)				
IT	338-38-5, Tetrapropylammonium tetrafluoroborate 429-06-1, Tetraethylammonium tetrafluoroborate 429-07-2, Tetraethylammonium hexafluorophosphate 429-42-5, Tetrabutylammonium fluoroborate 558-32-7 661-36-9, Tetramethylammonium tetrafluoroborate 1493-13-6D, Trifluoromethanesulfonic acid, tetraalkylphosphonium salts 1813-60-1, Tetrabutylphosphonium tetrafluoroborate 1863-63-4, Ammonium benzoate 2567-83-1, Tetraethylammonium perchlorate 5574-97-0, Tetrabutylammonium phosphate 7439-93-2D, Lithium, salts 7601-90-3D, Perchloric acid, tetraalkylphosphonium salts 7790-98-9D, Ammonium perchlorate, tetraalkyl derivs. 12110-21-3, Tetrapropylammonium hexafluorophosphate 13826-83-0D, Ammonium tetrafluoroborate, tetraalkyl derivs. 14283-07-9, Lithium fluoroborate 14874-70-5D, Tetrafluoroborate, tetraalkylphosphonium salts 16909-22-1, Tetraethylammonium benzoate 16919-18-9D, Hexafluorophosphate, tetraalkylphosphonium salts				

16941-11-0D, Ammonium hexafluorophosphate, tetraalkyl derivs.
 18819-89-1, Tetrabutylammonium benzoate 19090-60-9, Ammonium adipate
 19443-40-4, Ammonium borodisalicylate 21324-40-3, Lithium
 hexafluorophosphate 35895-70-6, Tetrabutyl ammonium
 trifluoromethanesulfonate 38542-94-8D, Ammonium
 trifluoromethanesulfonate, tetraalkyl derivs. 41606-95-5,
 Tetraethylammonium phthalate 53123-48-1 68874-26-0 82169-85-5,
 Ammonium azelate 106362-67-8 111754-37-1, Tetraethylammonium maleate
 111754-40-6, Tetraethylammonium maleate 111928-06-4,
 Tetraethylphosphoniumtrifluoromethanesulfonate 114480-39-6
 114609-41-5, Tetraethylphosphonium phthalate 129024-43-7
 RL: USES (Uses)

(electrolyte containing random polyethers and plasticizers and)

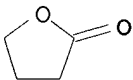
IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene
 carbonate 107-21-1, Monoethylene glycol, uses 108-32-7, Propylene
 carbonate 112-27-6, Triethylene glycol 112-34-5, Diethylene glycol
 monobutyl ether 112-35-6, Triethylene glycol monomethyl ether
 112-50-5, Triethylene glycol monoethyl ether 112-60-7, Tetraethylene
 glycol 112-73-2, Diethylene glycol dibutyl ether 112-98-1,
 Tetraethylene glycol dibutyl ether 123-91-1, Diethylene oxide, uses
 143-22-6, Triethylene glycol monobutyl ether 143-24-8, Tetraethylene
 glycol dimethyl ether 1559-34-8, Tetraethylene glycol monobutyl ether
 4353-28-0, Tetraethylene glycol diethyl ether 5650-20-4, Tetraethylene
 glycol monoethyl ether 9004-74-4, **Polyethylene oxide**
 , monomethyl ether 9004-77-7, Polyethylene glycol monobutyl ether
 9038-95-3 9063-06-3 23305-64-8, Triethylene glycol monopropyl ether
 23307-36-0, 3,6,9,12-Tetraoxapentadecan-1-ol 23783-42-8, Tetraethylene
 glycol monomethyl ether 24991-55-7, Polyethylene glycol dimethyl ether
 25322-68-3, **Polyethylene oxide** 27879-07-8,
Polyethylene oxide, monoethyl ether 28830-99-1,
 4,7,10,13,16-Pentaoxanonadecane 31885-97-9, Polyethylene glycol dibutyl
 ether 34410-16-7, **Polyethylene oxide**, monopropyl
 ether 50958-06-0 53609-62-4, Polyethylene glycol diethyl ether
 54692-61-4 55068-41-2 60314-50-3, Polyethylene glycol dipropyl ether
 61419-46-3 63512-36-7, Triethylene glycol dibutyl ether 76058-48-5,
 Tetraethylene glycol butyl methyl ether 77318-45-7, 4,7,10,13-
 Tetraoxahexadecane 80730-57-0
 RL: MOA (Modifier or additive use); USES (Uses)

(plasticizer, electrolyte containing random polyethers and)

IT 96-48-0, γ - Butyrolactone
 RL: MOA (Modifier or additive use); USES (Uses)
 (plasticizer, electrolyte containing random polyethers and)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 25 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 1993:564029 HCAPLUS
 DN 119:164029
 TI Secondary battery with solid electrolyte
 IN Simon, Bernard; Boeue, Jean Pierre
 PA Alcatel Alsthom Compagnie Generale d'Electricite, Fr.
 SO Eur. Pat. Appl., 4 pp.
 CODEN: EPXXDW

DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 517069	A1	19921209	EP 1992-108841	19920526
	EP 517069	B1	19960327		
	R: CH, DE, ES, FR, GB, IT, LI, NL, SE				
	FR 2677174	A1	19921204	FR 1991-6589	19910531
	FR 2677174	B1	19930806		
	ES 2084871	T3	19960516	ES 1992-108841	19920526
	US 5232795	A	19930803	US 1992-889234	19920528
	JP 05205778	A2	19930813	JP 1992-139408	19920529
PRAI	FR 1991-6589	A	19910531		

AB The **battery** has an **electrolyte** of a polymer containing a Li salt and a dipolar aprotic solvent, an anode of a Li-intercalatable carbonaceous material and the **electrolyte**, and a cathode of a material having a high redox potential, the **electrolyte**, and a conductive powder. The carbonaceous material is at least on the surface less crystalline than graphite and impermeable to solvent, while permitting the diffusion of Li. The carbonaceous material is selected from coke, graphitized carbon fibers, and pyrolytic C, and it contains a surface layer obtained by chemical vapor deposition using hydrocarbons or by carbonization of a polymer film. The salt anions are selected from AsF₆⁻, BF₄⁻, PF₆⁻, CF₃SO₃⁻, ClO₄⁻, BPh₄⁻, N(CF₃SO₂)₂⁻, and SCN⁻; the nonaq. solvent is selected from ethylene carbonate, propylene carbonate, THF, etc.; and the polymer is selected from PEO, poly(propylene oxide) and ethylene oxide-propylene oxide copolymer. The cathode active material is selected from LiV₂O₅, LiCO₂, and Li-doped polyaniline or polypyrrole. The stability of the invention button-type **battery** anode was demonstrated in >500 charge-discharge cycles.

IC ICM H01M010-40

ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery** anode carbonaceous material; anode lithium intercalatable carbonaceous material; polymer **electrolyte** carbonaceous material anode; salt lithium solvent polymer **electrolyte**; solvent polar salt polymer **electrolyte**

IT **Battery electrolytes**

(aprotic dipolar solvent-containing lithium salt-PEO or lithium salt-poly(propylene oxide) complexes)

IT **Batteries, secondary**

(lithium-intercalatable carbonaceous material, long cycle-life)

IT Carbonaceous materials

Coke

RL: USES (Uses)

(lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

IT Solvents

(aprotic, dipolar, **electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)

IT Anodes

(**battery**, lithium-intercalatable carbonaceous materials, containing polymer **electrolytes**)

IT Carbon fibers, uses

RL: USES (Uses)

(graphite, lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

IT 7440-44-0 7782-42-5
RL: USES (Uses)
(carbon fibers, graphite, lithium-intercalatable, anodes, containing polymer **electrolytes**, for **batteries**)

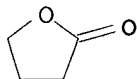
IT 12162-92-4, Lithium vanadium oxide (LiV2O5) 12190-79-3, Cobalt lithium oxide (LiCoO2) 25233-30-1D, reduced, lithium-doped 30604-81-0D, Polypyrrole, reduced, lithium-doped
RL: USES (Uses)
(cathodes, containing polymer **electrolytes**, for **batteries**)

IT 67-68-5, DMSO, uses 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-99-9, THF, uses 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 616-42-2, Dimethyl sulfite 24991-55-7, Polyethyleneglycol dimethyl ether
RL: USES (Uses)
(**electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)

IT 7439-93-2D, Lithium, polymer complexes 9003-11-6D, Lithium complexes 25322-68-3D, **Polyethylene oxide**, Lithium complexes 25322-69-4D, Polypropylene oxide, Lithium complexes
RL: USES (Uses)
(**electrolytes** from nonaq. aprotic dipolar solvents and, for **batteries** and **battery** anodes and cathodes)

IT 96-48-0, γ - Butyrolactone
RL: USES (Uses)
(**electrolytes** from lithium salt-polymer complexes and, for **batteries** and **battery** anodes and cathodes)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L30 ANSWER 26 OF 26 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 1993:499821 HCAPLUS
DN 119:99821
TI A new gelling agent and its application as a solid **electrolyte** for lithium **batteries**
AU Ue, Makoto; Kaitoh, Mitsumasa; Yasukawa, Eiki; Mori, Shoichiro
CS Tsukuba Res. Cent., Mitsubishi Petrochem. Co., Ltd., Ami, 300-03, Japan
SO Electrochimica Acta (1993), 38(9), 1301-2
CODEN: ELCAAV; ISSN: 0013-4686
DT Journal
LA English
AB A new gelling agent 1,3:2,4-di(p-methoxycarbonylbenzylidene)sorbitol was used to immobilize liquid **electrolytes** for Li **batteries**. The liquid **electrolytes** were solidified without a significant decrease in conductivity. The mech. strength of a gelled **electrolyte** comprising a polymer matrix of poly(ethylene oxide)-grafted poly(methacrylate) and the liquid **electrolyte** was remarkably enhanced without a conductivity decrease.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST methoxycarbonylbenzylidenesorbitol gelling agent liq **electrolyte battery**; lithium **battery** gelled **electrolyte**;

polyethylene oxide grafted polymethacrylate gelled electrolyte

IT Battery electrolytes
(liquid, dibenzylidenesorbitol derivs. gelling agents in, for immobilization)

IT 68-12-2, N,N-Dimethylformamide, uses 96-48-0, γ -Butyrolactone 108-32-7, Propylene carbonate 110-71-4
RL: USES (Uses)
(electrolyte containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium batteries, for immobilization)

IT 108927-94-2
RL: USES (Uses)
(electrolyte containing, gelled, for lithium batteries, for mech. strength)

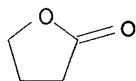
IT 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate (LiBF₄)
RL: USES (Uses)
(electrolyte, dibenzylidenesorbitol derivs. gelling agents in, for batteries, for immobilization)

IT 125498-92-2
RL: USES (Uses)
(gelling agent, electrolytes containing, liquid, for immobilization, for lithium batteries)

IT 96-48-0, γ -Butyrolactone
RL: USES (Uses)
(electrolyte containing, dibenzylidenesorbitol derivs. gelling agents in, for lithium batteries, for immobilization)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



=> => D QUE

L5	1	SEA FILE=REGISTRY ABB=ON	BUTYROLACTONE/CN
L6	1	SEA FILE=REGISTRY ABB=ON	"POLYETHYLENE OXIDE"/CN
L7	15837	SEA FILE=HCAPLUS ABB=ON	L5 OR BUTYROLACTONE
L8	84653	SEA FILE=HCAPLUS ABB=ON	L6
L9	321	SEA FILE=HCAPLUS ABB=ON	L7 AND L8
L11	2202	SEA FILE=HCAPLUS ABB=ON	L7 (L) ELECTROLYT?
L13	4	SEA FILE=HCAPLUS ABB=ON	L11 (L) L8
L15	140	SEA FILE=HCAPLUS ABB=ON	L9 AND ELECTROLYT?
L16	97	SEA FILE=HCAPLUS ABB=ON	L15 AND BATTER?
L17	2675	SEA FILE=HCAPLUS ABB=ON	L8 (L) DEV/RL
L18	61	SEA FILE=HCAPLUS ABB=ON	L17 AND L16
L19	1588	SEA FILE=HCAPLUS ABB=ON	L7 (5A) SOLVENT#
L21	6	SEA FILE=HCAPLUS ABB=ON	L18 AND L19
L22	9	SEA FILE=HCAPLUS ABB=ON	L13 OR L21
L23	7685	SEA FILE=HCAPLUS ABB=ON	POLYMER (4A) ADDITIV?
L24	1	SEA FILE=HCAPLUS ABB=ON	L18 AND L23
L25	1	SEA FILE=HCAPLUS ABB=ON	L16 AND L23
L26	9	SEA FILE=HCAPLUS ABB=ON	L22 OR L24 OR L25
L27	47	SEA FILE=HCAPLUS ABB=ON	L7 AND POLYETHYLENE OXIDE
L28	30	SEA FILE=HCAPLUS ABB=ON	L27 AND ELECTROLYT?
L29	20	SEA FILE=HCAPLUS ABB=ON	L28 AND BATTER?

L30 26 SEA FILE=HCAPLUS ABB=ON L26 OR L29
 L31 78 SEA FILE=HCAPLUS ABB=ON L7 AND PEO
 L32 53 SEA FILE=HCAPLUS ABB=ON L31 AND ELECTROLYT? AND BATTER?
 L33 2 SEA FILE=HCAPLUS ABB=ON L19 AND L32
 L34 43 SEA FILE=HCAPLUS ABB=ON L11 AND L32
 L35 0 SEA FILE=HCAPLUS ABB=ON L23 AND L34
 L36 0 SEA FILE=HCAPLUS ABB=ON L23 AND L32
 L40 10 SEA FILE=HCAPLUS ABB=ON L32 AND NONAQ?
 L41 36 SEA FILE=HCAPLUS ABB=ON L30 OR L33 OR L35 OR L36 OR L40
 L42 10 SEA FILE=HCAPLUS ABB=ON L41 NOT L30

=> D L42 BIB ABS IND HITSTR 1-10

L42 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2004:964673 HCAPLUS
 DN 141:398264
 TI Method for preparation of chemically crosslinked polyacrylonitrile polymer
electrolyte as separator for secondary **battery**
 IN Chen, Show-An; Xue, Uan-Jie; Lee, Jen-Jeh; Wang, Po-Shen
 PA Taiwan
 SO U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004224233	A1	20041111	US 2003-428789	20030505
PRAI	US 2003-428789		20030505		

AB A composite gel-type polymer **electrolyte** membrane, as a separator between the pos. and the neg. electrode for secondary **battery**, consists of crosslinked gel-type polyacrylonitrile (PAN) **electrolytes**, polyvinylidene fluoride (PVDF) polymers and liquid **electrolytes**. The crosslinked gel-type PAN **electrolytes** are copolymd. by acrylonitrile (AN) monomers and crosslinked monomers with two terminal acrylic acid ester function groups. The PVdF can be PVdF-co-HFP polymers containing over 80% PVdF. The liquid **electrolytes** are made from using **nonaq.** solvents to dissolve alkaline or alkaline earth metallic salts. This invention has advantages of superior ionic conductivities and mech. strength at high temperature, fine compatible to pos. and neg. electrodes and potential to be industrialized.

IC ICM H01M010-40
 ICS H01M004-58; H01M004-60; H01M004-40

INCL 429303000; 429314000; 429316000; 429317000; 429307000; 429213000; 429231950; 429231400

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38

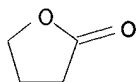
ST polyacrylonitrile **electrolyte** separator secondary **battery**

IT Secondary **batteries**
 (lithium; method for preparation of chemical crosslinked polyacrylonitrile **electrolyte** as separator for secondary **battery**)

IT Adhesion, physical
Battery electrolytes
 Conducting polymers
 Ionic conductivity
 Secondary **battery** separators
 Swelling, physical
 (method for preparation of chemical crosslinked polyacrylonitrile

- electrolyte as separator for secondary battery)**
- IT Alkali metal salts
Alkaline earth salts
Amides, uses
Esters, uses
Fluoropolymers, uses
Lactones
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT Polysulfides
RL: DEV (Device component use); USES (Uses)
(organic; method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT Fillers
(porous; method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT 67-64-1, Acetone, uses 67-68-5, DmsO, uses 68-12-2, Dmf, uses
96-48-0, γ - Butyrolactone 96-49-1, Ethylene
carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
110-71-4 463-79-6D, Carbonic acid, ester, acyclic 463-79-6D, Carbonic
acid, ester, cyclic 556-65-0, Lithium thiocyanate 616-38-6, Dimethyl
carbonate 872-50-4, n-Methylpyrrolidone, uses 7439-93-2, Lithium, uses
7440-44-0, Carbon, uses 7447-41-8, Lithium chloride (LiCl), uses
7550-35-8, Lithium bromide (LiBr) 7704-34-9D, Sulfur, organic compds.,
polymers 7791-03-9, Lithium perchlorate 9011-17-0,
Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium
iodide 10411-26-4, Butyl carbonate 12031-65-1, Lithium nickel oxide
(LiNiO₂) 12057-17-9, Lithium manganese oxide (LiMn₂O₄) 12162-79-7,
Lithium manganese oxide limno₂ 12190-79-3, Cobalt lithium oxide (CoLiO₂)
14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3,
Lithium hexafluorophosphate 24937-79-9, PvdF 29935-35-1, Lithium
hexafluoroarsenate 30604-81-0, Polypyrrole 33454-82-9, Lithium
triflate 39448-96-9, Graphite lithium 90076-65-6 132404-42-3
132843-44-8 210406-60-3
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT 25014-41-9P, Polyacrylonitrile
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT 25322-68-3, Peo
RL: MOA (Modifier or additive use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)
- IT 96-48-0, γ - Butyrolactone
RL: DEV (Device component use); USES (Uses)
(method for preparation of chemical crosslinked polyacrylonitrile
electrolyte as separator for secondary battery)

RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2004:412653 HCAPLUS

DN 140:409655

TI **Nonaqueous electrolytic solution for lithium battery**

IN Kim, Ju-Yup; Cho, Myung-Dong; Ryu, Young-Gyoon

PA Samsung SDI Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004096750	A1	20040520	US 2003-669464	20030925
	CN 1501541	A	20040602	CN 2003-158727	20030922
	JP 2004172120	A2	20040617	JP 2003-385057	20031114
PRAI	KR 2002-71397	A	20021116		

OS MARPAT 140:409655

AB A **nonaq. electrolytic** solution and a lithium **battery** employing the same are provided. The **nonaq. electrolyte** solution that contains a substituted or unsubstituted acetate can effectively stabilize lithium metal and improve the conductivity of lithium ions.

IC ICM H01M010-40

ICS H01M004-58; H01M004-48; H01M004-40

INCL 429326000; 429332000; 429218100; 429231950; 429231100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium **battery nonaq electrolytic soln**

IT Secondary **batteries**

(lithium; **nonaq. electrolytic** solution for lithium **battery**)

IT **Battery electrolytes**

(**nonaq. electrolytic** solution for lithium **battery**)

IT Carbon black, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolytic** solution for lithium **battery**)

IT Lithium alloy, base

RL: DEV (Device component use); USES (Uses)

(**nonaq. electrolytic** solution for lithium **battery**)

IT 71-43-2D, Benzene, organic solvents containing monofluoro derivs. **96-48-0**

, γ - **Butyrolactone** 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4

111-96-6, Diethyleneglycol dimethyl ether 112-36-7, Diethyleneglycol

diethyl ether 112-49-2, Triethyleneglycol dimethyl ether 463-79-6D,

Carbonic acid, ester 616-38-6, Dimethyl carbonate 646-06-0,

1,3-Dioxolane 872-36-6, Vinylene carbonate 1072-47-5,
 4-Methyl-1,3-dioxolane 1072-57-7 4499-99-4, Triethyleneglycol diethyl
 ether 7439-93-2, Lithium, uses 7440-44-0D, Carbon, sulfur compound,
 polymer 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur, carbon compound,
 polymer 12137-46-1, Kasolite 21324-40-3, Lithium hexafluorophosphate
 25322-68-3, Peo 29921-38-8, 4-Ethyl-1,3-dioxolane
 31371-55-8, Ethane, 1,2-dimethoxy-, homopolymer 73506-93-1,
 Diethoxyethane 74432-42-1, Lithium polysulfide 183140-14-9,
 1,3-Dioxetan-2-one 676610-04-1

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for lithium
 battery)

IT 105-37-3 105-53-3, Diethyl malonate 105-54-4 106-70-7 108-59-8,
 Dimethyl malonate 109-21-7 123-66-0 554-12-1 590-01-2 623-42-7
 626-82-4 1190-39-2, DiButyl malonate 6186-89-6, Ethylmethyl malonate
 17373-84-1, Butylethyl malonate 79546-83-1, Butylmethyl malonate
 90076-65-6

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution for lithium
 battery)

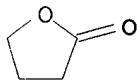
IT 96-48-0, γ - Butyrolactone

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic solution for lithium
 battery)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



L42 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2003:818002 HCAPLUS

DN 139:326050

TI **Nonaqueous electrolytes** based on alkali metal salts of
 N,N'-disubstituted amides of alkane iminosulfinic acid for electrochemical
 cells

IN Shembel, Elena; Koval, Ivan V.; Oliynik, Tat'yna G.; Chervakov, Oleg V.;
 Novak, Peter

PA Ener1 Battery Company, Ukraine

SO U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003194612	A1	20031016	US 2002-122788	20020415
	US 6858346	B2	20050222		
	WO 2003090297	A1	20031030	WO 2003-US11644	20030415
	WO 2003090297	C1	20041216		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
 GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
 LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
 PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
 UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

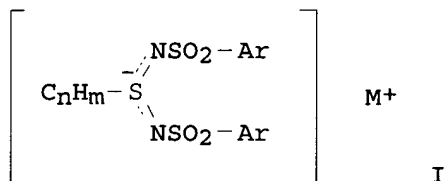
EP 1500155 A1 20050126 EP 2003-728413 20030415

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

PRAI US 2002-122788 A 20020415

WO 2003-US11644 W 20030415

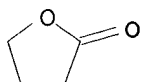
GI



- AB An organic salt having an alkali metal bound to a disubstituted amide of alkane iminosulfinic acid has the general formula (I), where Ar is an aromatic group, M is an alkali metal such as Li, K or Na, and C_nH_m is an alkane. The organic salt can be used to form **nonaq.** liquid and gel or plasticized polymer **electrolytes**. The **electrolytes** can be used to form improved lithium and lithium ion **batteries**.
- IC ICM H01M010-40
- INCL 429324000; 429339000; 429340000; 429337000; 429338000; 429326000; 429331000; 429332000; 429333000; 429303000
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 23, 38
- ST **battery nonaq electrolyte** alkane iminosulfinic acid amide; electrochem cell **nonaq electrolyte** alkane iminosulfinic acid amide
- IT Polymer **electrolytes**
(gel or plasticized; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
- IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(halo; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
- IT Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(lithiated; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
- IT Secondary **batteries**
(lithium; **nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
- IT **Battery electrolytes**
(**nonaq. electrolytes** based on alkali metal salts of N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem. cells)
- IT Fluoropolymers, uses
Polyoxyalkylenes, uses

- RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 70-55-3 98-10-2, Benzenesulfonamide
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide (V2O5),
uses 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate
9002-86-2, Polyvinyl chloride 9002-86-2D, Polyvinyl chloride,
chlorinated 9011-14-7, Pmma 12037-42-2, Vanadium oxide v6o13
12057-17-9, Lithium manganese oxide limn2o4 12798-95-7 14283-07-9,
Lithium tetrafluoroborate 24937-79-9, PvdF 25014-41-9,
Polyacrylonitrile 25322-68-3, Peo 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 66798-39-8
87871-75-8 90076-65-6 164383-74-8 164383-75-9
RL: DEV (Device component use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 613685-10-2P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic
preparation); PREP (Preparation); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 613685-08-8P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP
(Preparation); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer
RL: MOA (Modifier or additive use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 613685-09-9P
RL: SPN (Synthetic preparation); PREP (Preparation)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 67-68-5, DmsO, uses 68-12-2, Dmf, uses 96-48-0, γ -
Butyrolactone 96-49-1, Ethylene carbonate 107-13-1,
Acrylonitrile, uses 108-32-7, Propylene carbonate 110-71-4 111-96-6,
Diglyme 126-33-0, Sulfolane 127-19-5, Dimethyl acetamide 616-38-6,
Dimethyl carbonate 646-06-0, 1,3-Dioxolane
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)
- IT 96-48-0, γ - **Butyrolactone**
RL: TEM (Technical or engineered material use); USES (Uses)
(**nonaq. electrolytes** based on alkali metal salts of
N,N'-disubstituted amides of alkane iminosulfinic acid for electrochem.
cells)

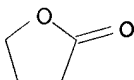
RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2003:437466 HCAPLUS
 DN 139:263175
 TI Characteristics of gel alkylene oxide polymer **electrolytes**
 containing γ - **butyrolactone**
 AU Matsuda, Yoshiharu; Fukushima, Tsuyoshi; Katoh, Yuichi; Ishiko, Eriko;
 Nishiura, Masahito; Kikuta, Manabu; Kono, Michiyuki
 CS Faculty of Engineering, Department of Applied Chemistry, Kansai
 University, Suita, Osaka, 564-8680, Japan
 SO Journal of Power Sources (2003) 119-121, 473-477
 CODEN: JPSODZ; ISSN: 0378-7753
 PB Elsevier Science B.V.
 DT Journal
 LA English
 AB Gel polymer **electrolytes** consisted of poly(alkylene oxide)
 (PAO), LiBF₄ or LiClO₄, and aprotic **solvents** (γ -
butyrolactone (GBL) and/or ethylene carbonate (EC)) were prepared
 and the conductivity was measured. The conductivity was very high and similar to that
 of the organic liquid **electrolytes**. The performance of Li | gel
 polymer **electrolyte** | LiCoO₂ cell was measured and compared to
 that of the cell with the liquid **electrolyte** corresponded. The
 cell with the gel **electrolyte** showed a decrease of capacity at
 high-rate discharge and low temperature owing to concentration polarization.
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38, 76
 ST alkylene oxide polymer **electrolyte** gamma **butyrolactone**
 lithium salt **battery**; discharge capacity performance gel
electrolyte lithium concn carbonate
 IT Solvents
 (aprotic; characteristics of gel alkylene oxide polymer
electrolytes containing γ - **butyrolactone**)
 IT **Battery electrolytes**
 Crosslinking
 Gels
 Ionic conductivity
 Polymer **electrolytes**
 (characteristics of gel alkylene oxide polymer **electrolytes**
 containing γ - **butyrolactone**)
 IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN
 (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent);
 USES (Uses)
 (characteristics of gel alkylene oxide polymer **electrolytes**
 containing γ - **butyrolactone**)
 IT Binders
 (composite electrode with C and CoLiO₂; characteristics of gel alkylene
 oxide polymer **electrolytes** containing γ -
butyrolactone)

- IT **Electrolytic polarization**
(concentration, change with cycling; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT **Secondary batteries**
(lithium; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 15520-11-3, Bis(4-tert-butylcyclohexyl) peroxydicarbonate
RL: CAT (Catalyst use); USES (Uses)
(characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 9003-11-6P, Ethylene oxide-propylene oxide copolymer
RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 12190-79-3, Cobalt lithium oxide (CoLiO₂)
RL: DEV (Device component use); USES (Uses)
(composite electrode with C and binder; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(composite electrode with binder and CoLiO₂; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(electrode; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 7791-03-9 14283-07-9
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with aprotic solvent and PEO-PPO; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 96-48-0, γ - Butyrolactone 96-49-1, Ethylene carbonate
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with lithium salt and PEO-PPO; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- IT 96-48-0, γ - Butyrolactone
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(gels with lithium salt and PEO-PPO; characteristics of gel alkylene oxide polymer electrolytes containing γ - butyrolactone)
- RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2002:163800 HCAPLUS

DN 136:219519

TI Phenyl boron-based compounds as anion receptors for **nonaqueous battery electrolytes**

IN Lee, Hung Sui; Yang, Xiao-qing; McBreen, James; Sun, Xuehui

PA Brookhaven Science Associates, Llc, USA

SO U.S., 15 pp., Cont.-in-part of U. S. 6,022,643.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6352798	B1	20020305	US 2000-492569	20000127
	US 6022643	A	20000208	US 1997-986846	19971208
PRAI	US 1997-986846	A2	19971208		

OS MARPAT 136:219519

AB Novel fluorinated boronate-based compds. which act as anion receptors in **nonaq. battery electrolytes** are provided.

When added to **nonaq. battery electrolytes**, the fluorinated boronate-based compds. of the invention enhance ionic conductivity and cation transference number of **nonaq. electrolytes**. The fluorinated boronate-based anion receptors include different fluorinated alkyl and aryl groups.

IC ICM H01M006-14

INCL 429324000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27ST **battery electrolyte** anion receptor fluorinated boronate based compdIT **Battery electrolytes**

Ionic conductivity

(Ph boron-based compds. as anion receptors for **nonaq.****battery electrolytes**)

IT Polyanilines

Polyoxyalkylenes, uses

Polysulfides

Transition metal chalcogenides

Transition metal oxides

RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for **nonaq.****battery electrolytes**)

IT Oxides (inorganic), uses

RL: DEV (Device component use); USES (Uses)

(lithiated; Ph boron-based compds. as anion receptors for **nonaq.****battery electrolytes**)

IT Lithium alloy, base

RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for **nonaq.****battery electrolytes**)IT 75-05-8, Acetonitrile, uses 96-48-0, γ -**Butyrolactone** 96-49-1, Ethylene carbonate 107-31-3, Methyl

formate 108-32-7, Propylene carbonate 109-87-5, Dimethoxymethane

109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 115-10-6, Dimethyl

ether 126-33-0, Sulfolane 534-22-5, 2-Methylfuran 616-38-6, Dimethyl

carbonate 646-06-0, 1,3-Dioxolane 872-50-4, 1-Methyl-2-pyrrolidinone,

uses 1072-47-5 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole

2923-17-3, Lithium trifluoroacetate 7439-93-2, Lithium, uses
 7440-44-0D, Carbon, intercalation compound, with lithium 7447-41-8,
 Lithium chloride, uses 7550-35-8, Lithium bromide 7789-24-4, Lithium
 fluoride, uses 7791-03-9, Lithium perchlorate 9011-17-0,
 Hexafluoropropylene-vinylidene fluoride copolymer 10377-51-2, Lithium
 iodide 12031-65-1, Lithium nickel oxide linio2 12057-17-9, Lithium
 manganese oxide limn2o4 12162-79-7, Lithium manganese oxide limno2
 12190-79-3, Cobalt lithium oxide colio2 12201-18-2, Lithium molybdenum
 sulfide limos2 14283-07-9, Lithium tetrafluoroborate 18424-17-4,
 Lithium hexafluoroantimonate 19836-78-3, 3-Methyl-2-oxazolidinone
 21324-40-3, Lithium hexafluorophosphate 25014-41-9, Polyacrylonitrile
 25233-30-1, Polyaniline 25322-68-3, Peo 25948-29-2, Carbon
 disulfide, homopolymer 29935-35-1, Lithium hexafluoroarsenate
 39448-96-9, Graphite lithium 55326-82-4, Lithium titanium sulfide litis2
 55886-04-9, Lithium niobium selenide Li3NbSe3 87187-79-9, Propanoic
 acid, pentafluoro-, lithium salt 87442-01-1, Benzoic acid, pentafluoro-,
 lithium salt 131344-56-4, Cobalt lithium nickel oxide 138187-48-1,
 Lithium vanadium oxide Li1.2V2O5 152991-98-5, Aluminum lithium nickel
 oxide 159967-11-0, Lithium magnesium nickel oxide 180984-62-7, Lithium
 nickel titanium oxide 256345-13-8, Lithium vanadium oxide Li2.5V6O13
 RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.

battery electrolytes)

IT 23542-71-4P 365458-32-8P 365458-33-9P 365458-34-0P 365458-35-1P
 365458-36-2P 365458-37-3P 365458-38-4P 365458-39-5P 365458-40-8P
 402564-35-6P 402564-36-7P 402564-37-8P 402564-38-9P 402564-39-0P

RL: DEV (Device component use); MOA (Modifier or additive use); SPN

(Synthetic preparation); PREP (Preparation); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.

battery electrolytes)

IT 96-48-0, γ - Butyrolactone

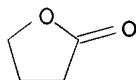
RL: DEV (Device component use); USES (Uses)

(Ph boron-based compds. as anion receptors for nonaq.

battery electrolytes)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2001:488750 HCAPLUS

DN 135:79460

TI **Nonaqueous electrolytic secondary battery**

IN Hosoya, Yosuke

PA Sony Corporation, Japan

SO Eur. Pat. Appl., 16 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1113515	A1	20010704	EP 2000-128148	20001221

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO

JP 2001185221	A2	20010706	JP 1999-369266	19991227
US 2001036579	A1	20011101	US 2000-749982	20001227
US 6656634	B2	20031202		

PRAI JP 1999-369266 A 19991227

AB A nonaq. electrolytic cell comprises a pos. electrode, which has a pos. electrode active material layer containing, at least a pos. electrode active material, a neg. electrode, which has a neg. electrode active material layer containing, at least, a neg. electrode active material, and an electrolyte wherein a sulfur compound is added to at least one of the pos. electrode active material layer, the neg. electrode active material layer, and the electrolyte.

IC ICM H01M004-50

ICS H01M004-52; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery nonaq electrolyte

IT Battery anodes

Battery cathodes

Battery electrolytes

Conducting polymers

(nonaq. electrolytic secondary battery)

IT Coke

Fluoropolymers, uses

Polyacetylenes, uses

Polyoxyalkylenes, uses

Polyphosphazenes

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic secondary battery)

IT Thiols (organic), uses

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic secondary battery)

IT Carbon fibers, uses

RL: DEV (Device component use); USES (Uses)

(vitreous; nonaq. electrolytic secondary battery)

IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -

Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 554-12-1, Methylpropionate 616-38-6, Dimethyl carbonate 623-42-7, Methyl butyrate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 2916-31-6 4437-85-8, Butylene carbonate 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, PvdF 25067-58-7, Polyacetylene 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 29935-35-1, Lithium hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolytic secondary battery)

IT 693-36-7, Distearyl thiodipropionate 7487-88-9, Magnesium sulfate, uses

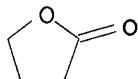
7757-82-6, Sodium sulfate, uses 7757-83-7, Sodium sulfite 7757-88-2,

Magnesium sulfite 7778-80-5, Potassium sulfate, uses 10117-38-1,

Potassium sulfite

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic secondary battery)
 IT 872-50-4, n-Methylpyrrolidone, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolytic secondary battery)
 IT 96-48-0, γ - Butyrolactone
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic secondary battery)
 RN 96-48-0 HCAPLUS
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
 AN 2001:246688 HCAPLUS
 DN 134:254694
 TI Gel **electrolyte battery**
 IN Shibuya, Mashio; Hatazawa, Tsuyonobu; Hara, Tomitaro; Shibamoto, Goro;
 Goto, Shuji
 PA Sony Corporation, Japan
 SO Eur. Pat. Appl., 24 pp.
 CODEN: EPXXDW
 DT Patent
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1089371	A1	20010404	EP 2000-121124	20000928
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001167797	A2	20010622	JP 1999-375345	19991228
	TW 512555	B	20021201	TW 2000-89119769	20000925
	NO 2000004856	A	20010402	NO 2000-4856	20000927
	US 6509123	B1	20030121	US 2000-672881	20000928
	CN 1293461	A	20010502	CN 2000-128592	20000930
PRAI	JP 1999-279790	A	19990930		
	JP 1999-375345	A	19991228		

AB The present invention provides a gel **electrolyte** cell including a **nonaq. electrolytic** solution containing lithium-containing **electrolyte** salt solved in a **nonaq.** solvent and made into a gel state by a matrix polymer, and the gel **electrolyte** contains vinylene carbonate or derivative thereof in the amount not less than 0.05 wt% and not greater than 5 wt%. This gel **electrolyte** exhibits an excellent chemical stability with the neg. electrode, strength, and liquid-retention characteristic. This gel **electrolyte** enables to obtain a gel **electrolyte** cell satisfying the cell capacity, cycle characteristic, load characteristic, and low-temperature characteristic.
 IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST **battery gel electrolyte**
 IT **Battery electrolytes**
 Gels
 (gel **electrolyte battery**)

IT Fluoropolymers, uses
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)

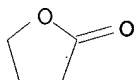
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(current collector; gel **electrolyte battery**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 872-36-6,
Vinylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses
7791-03-9, Lithium perchlorate 9011-17-0, Hexafluoropropylene-vinylidene
fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9,
Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25067-61-2,
Polymethacrylonitrile 25322-68-3, Peo 25322-69-4,
Polypropylene oxide 90076-65-6 113066-89-0, Cobalt lithium nickel
oxide Co0.2LiNi0.8O2 132843-44-8
RL: DEV (Device component use); USES (Uses)
(gel **electrolyte battery**)

IT 96-48-0, γ - Butyrolactone 452-10-8,
2,4-Difluoroanisole 7782-42-5, Graphite, uses 167951-81-7
RL: MOA (Modifier or additive use); USES (Uses)
(gel **electrolyte battery**)

IT 96-48-0, γ - Butyrolactone
RL: MOA (Modifier or additive use); USES (Uses)
(gel **electrolyte battery**)

RN 96-48-0 HCAPLUS
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 2000:592491 HCAPLUS

DN 133:196001

TI Gel **electrolyte battery**

IN Shibuya, Mashio; Goto, Shuji

PA Sony Corp., Japan

SO Eur. Pat. Appl., 21 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1030398	A1	20000823	EP 2000-102764	20000210
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2000243447	A2	20000908	JP 1999-41456	19990219
US 6465134	B1	20021015	US 2000-499448	20000207
TW 494592	B	20020711	TW 2000-89102212	20000210
CN 1267926	A	20000927	CN 2000-108303	20000218

PRAI JP 1999-41456 A 19990219

AB A gel **electrolyte** comprised of a **nonaq.** **electrolytic** solution immersed in a matrix polymer, in which ion conductivity of a solvent is improved and superior cyclic characteristics are achieved. To this end, the gel **electrolyte** includes an **electrolyte**, a matrix polymer and a **nonaq.** solvent. The **nonaq.** solvent is a mixed solvent of ethylene carbonate (EC), propylene carbonate (PC) and γ - **butyrolactone** (GBL). The **nonaq.** solvent is of a weight composition in an area in a triangular phase diagram (EC, PC, GBL) surrounded by a point (70, 30, 0), a point (55, 15, 30), a point (15, 55, 30) and a point (30, 70, 0). A gel **electrolyte battery** employing this **electrolyte** is also disclosed.

IC ICM H01M010-40

ICS H01M006-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38ST **battery gel electrolyte**IT **Battery electrolytes**

Secondary batteries

(gel **electrolyte battery**)

IT Fluoropolymers, uses

Polyoxyalkylenes, uses

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(gel **electrolyte battery**)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2

113066-91-4, Cobalt lithium nickel oxide Co0.8LiNi0.2O2

RL: DEV (Device component use); USES (Uses)

(gel **electrolyte battery**)IT 96-48-0, γ - **Butyrolactone** 96-49-1, Ethylene

carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate

9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3,

Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride

25322-68-3, PEO 25322-69-4, Polypropylene oxide 90076-65-6

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(gel **electrolyte battery**)

IT 100-66-3D, Anisole, fluoro derivative

RL: MOA (Modifier or additive use); USES (Uses)

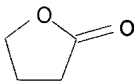
(gel **electrolyte battery**)IT 96-48-0, γ - **Butyrolactone**

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)

(gel **electrolyte battery**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L42 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
AN 2000:144320 HCAPLUS
DN 132:183114

TI **Nonaqueous electrolyte batteries**

IN Yoshihisa, Hiroyoshi

PA Yuasa Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

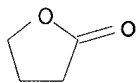
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000067916	A2	20000303	JP 1998-241440	19980827
PRAI	JP 1998-241440		19980827		
AB	The batteries , containing Li intercalating carbonaceous anodes, use Li ₂ CO ₃ saturated electrolyte solns. or solid electrolytes .				
IC	ICM H01M010-40				
	ICS H01M010-40				
CC	52-2 (Electrochemical, Radiational, and Thermal Energy Technology)				
ST	secondary lithium battery electrolyte lithium carbonate; battery lithium carbonate satd electrolyte				
IT	Battery electrolytes (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	96-48-0, γ- Butyrolactone 96-49-1, Ethylene carbonate 14283-07-9, Lithium fluoroborate 25014-41-9, Polyacrylonitrile 25322-68-3, Peo RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	554-13-2, Lithium carbonate RL: MOA (Modifier or additive use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
IT	96-48-0, γ- Butyrolactone RL: DEV (Device component use); USES (Uses) (electrolyte solns. and solid electrolytes saturated with lithium carbonate for secondary lithium batteries)				
RN	96-48-0 HCAPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



L42 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN

AN 1989:518216 HCAPLUS

DN 111:118216

TI Solidification of **nonaqueous electrolyte** solutions

IN Watanabe, Masashi; Kajita, Hiroyuki; Kumada, Yasuyuki

PA Sumitomo Chemical Co., Ltd., Japan; Meisei Chemical Works, Ltd.

SO Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01112667	A2	19890501	JP 1987-269056	19871023
PRAI	JP 1987-269056		19871023		

AB A **nonaq. electrolyte** solution is solidified by absorbing the solution into a highly water-absorbable mono- or poly-isocyanate-modified **PEO**. The solidified **electrolyte** has high elec. conductivity and is useful for **Li batteries** and electrochromic devices, etc. Thus, Sumikagel R 30 R was used for the solidification of a **LiClO₄/γ- butyrolactone electrolyte**.

IC ICM H01M006-18
ICS C08G018-48; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 74, 76

ST solid **electrolyte** modified **PEO**; lithium **battery electrolyte** solid; lithium perchlorate modified **PEO electrolyte**; electrochromic device solid **electrolyte**

IT Optical imaging devices
(electrochromic, cyanate-modified **PEO** absorbent for solid **electrolytes** in)

IT **Batteries**, secondary
(solid-**electrolyte**, cyanate-modified **PEO** absorbent for **nonaq. lithium**)

IT 117989-91-0, Sumikagel R 30R
RL: USES (Uses)
(absorbent, for **nonaq. lithium perchlorate electrolyte** solns., for lithium **batteries** and electrochromic devices)

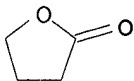
IT 96-48-0, γ- **Butyrolactone** 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
RL: USES (Uses)
(**electrolyte** containing lithium perchlorate and, cyanate-modified **PEO** absorbent in, for lithium **batteries** and electrochromic devices)

IT 7791-03-9, Lithium perchlorate
RL: USES (Uses)
(**electrolyte**, **nonaq.**, cyanate-modified **PEO** absorbent for, for lithium **batteries** and electrochromic devices)

IT 96-48-0, γ- **Butyrolactone**
RL: USES (Uses)
(**electrolyte** containing lithium perchlorate and, cyanate-modified **PEO** absorbent in, for lithium **batteries** and electrochromic devices)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



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